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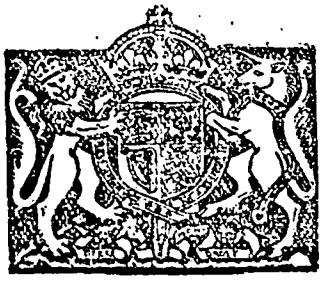


REPORT

108840

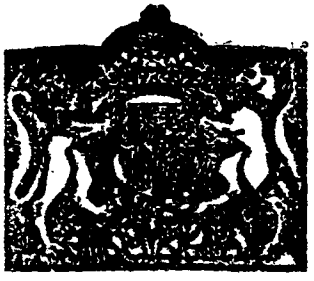
OF THE

HEALTH SURVEY AND DEVELOPMENT COMMITTEE

Vol. III

Appendices.

PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI.
PRINTED BY THE MANAGER, GOVERNMENT OF INDIA PRESS, SIMLA.
1946.
Price : *Re.* 1 *Annas* 12 *or* 2*s.* 6*d.*



REPORT

OF THE

HEALTH SURVEY AND DEVELOPMENT COMMITTEE

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Vol. III

Appendices

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APPENDIX 1.

Statement showing average area and population of administrative units in the Provinces.

Name of Province.	No. of districts.	Area in sq. miles.	Per district			Range of Variation.				
			Population	Average area (in sq. miles)	Average population.	Area in sq. miles.			Population.	
Madras	*24	*126,136	*48,564,329	*5,255·7	*2,023,514	989	to	9,107	209,709	to 3,929,425
Bombay	19	76,443	20,849,840	4,023·3	1,097,360	153	to	6,646	261,147	to 1,373,466
Bengal	†26	†77,408	†60,306,525	†2,867·0	†2,155,468	561	to	6,156	247,053	to 6,023,758
United Provinces	48	106,247	55,020,617	2,213·3	1,146,263	976	to	5,628	266,244	to 3,963,574
Punjab	30	99,089	28,418,819	3,303·0	947,294	80	to	9,979	38,576	t 1,695,375
Bihar	16	69,745	36,340,151	4,359·1	2,271,259	2,164	to	7,159	912,734	to 3,457,070
C. P. and Berar	19	98,575	16,813,584	5,177·6	884,925	2,435	to	9,205	438,342	to 1,549,509
Assam	14	54,951	10,204,733	3,925·1	728,910	571	to	8,142	6,512	to 3,116,602
N.-W. F. P.	6	14,263	3,038,067	2,377·2	506,344	1,098	to	4,216	289,404	to 851,833
Orissa	6	32,198	8,728,544	5,366·3	1,454,757	2,194	to	9,875	1,029,430	to 2,431,427
Sind	8	48,136	4,535,008	6,017·0	566,876	1,069	to	13,649	304,034	to 758,748
Baluchistan	6	54,456	501,631	9,076·0	83,605	407	to	19,429	6,009	to 164,899

*Excluding Madras city.
†Excluding Calcutta city.

P. T. O.

APPENDIX 1—*contd.*

Name of Province	Name of administrative unit.	Number of such units.	Area (in. sq. miles)	Population	Average area (in sq. miles.)	Average population.
1	2	3	4	5	6	7
1. Madras	Taluk	233	125,790	48,764,329	539·9	209,289
2. Bombay	Taluk	186	76,443	20,849,840	411·0	112,096
3. C. P. and Berar ..	Tehsil	99	98,408	16,813,584	994·0	169,834
4. United Provinces ..	Tehsil	206	106,149	55,020,617	515·3	267,090
5. Panjab	Tehsil	115	91,571	28,418,819	796·3	247,120
6. N.-W. F. P.	Tehsil	18	13,518	3,038,067	751·0	168,781
7. Sind	Taluk	67	48,136	4,535,008	718·4	67,687
8. Orissa	Taluk*	21	17,532	2,983,126	834·8	142,054
	Thana	51	13,815	5,745,418	270·9	112,655
9. Bengal	Thana	609	77,442	60,306,525	127·2	99,025
10. Assam	Thana	131	55,043	10,204,733	420·2	77,899
11. Bihar	Thana	201	69,355	36,340,151	345·0	180,797

*Taluk in respect of the portion taken from Madras Presidency & Thana in respect of that which was taken from "Bihar & Orissa."

APPENDIX 2.

Long-term Programme.

Staff and hospital accommodation in primary unit, secondary unit and district headquarters organisation in the long-term programme.

PRIMARY UNIT. Name	No.	SECONDARY UNIT. Name	No.
Controlling Officers	1	Administrative Officers	1
Medical Officers	5	*650-bed hospital*:	
		Heads of the sections of medicine, surgery, maternity, pathology & T. B.	5
Other staff:			
Public health nurses ..	6		
Midwives	6	Medical Officers:	
Sanitary inspectors	2	Senior visiting officers (Part-time)	20
Health assistants	2	Junior "	12
Fitter mistry	1	Resident M. O.	15
Inferior servants	10	Anaesthetists	18
		Pathologists	24
		House staff	45
75-bed hospital:			
Nurses:			
Matron	1	*Nurses*:	
Assistant Matron	1	Matron	1
Night Sister	1	Assistant Matron	1
Theatre Sister	1	Sister Tutor	1
Ward Sisters	4	Night Sister	1
Staff Nurses	12	Theatre Sisters	3
		Ward O. P. & Special department sisters	40
Hospital social workers	3	Assistant night sister ..	1
Ward attendants	8	Staff nurses	113
Compounders	3	Home sister	1
Cooks	3	Home keeper	1
Kitchen servants	3	Hospital social workers ..	15
Sweepers	8	Night staff nurses	2
Mistry	1		
Malis	2	*Kitchen staff*:	
		cooks	15
		Servants	15
		Sweepers	50
		Mistry	2
		Mali	3
		Other staff:	
		Assistant Public Health Engineer	1
		Senior public health nurses ..	2
		Sanitary inspectors	2
		Ward attendants	50
		Compounders	25
		Clerical:	
		Head clerk	1
		Clerks	4
		Statistical clerk	1
		Typists	2

APPENDIX 2—*contd.*

Long-term Programme—*contd.*

District Headquarters Organisation.

Name	No.
Administrative staff:	
Officer in charge of district health services	1
Deputies	4 or 5
2,500-bed Hospital:	
Heads of sections of medicine, maternity, surgery and pathology	4
Research workers	8
Research workers T. B.	2
Medical officers:	
Senior medical officers	28
Junior medical officers	28
Resident M. O.	30
Registrar & Anaesthetist	23
Pathologist	24
House staff	116
Nurses:	
Matron Superintendent	1
Matron	3
Assistant Matron	4
Sister Tutor	4
Night Sister	4
Theatre Sister	12
Sister nurses (for ward O. P. & Special Deptt.)	150
Assistant night sister	4
Night staff nurse	8
Staff nurse	427
House sisters	4
House keeper	4
Hospital social worker	50
Jamadar	10
Ward attendants	200
Pharmacist	
Compounders	100
Kitchen staff:	
Head cook	
Cook	60
Kitchen servants	60
Mistry	8
Sweepers	200
Mali	25
Public Health Engineering:	
Sanitary engineers	2
Assistant sanitary engineers	18
Draftsmen	3
Inspector engineering	2
Fitter mechanic	1
Supervisory health visitor	1
Supervisory sanitary inspector	1
Clerical staff:	
Head clerk	1
Accountant	1
Asst. accountant	2
Clerks	16
Statistical clerk	4

APPENDIX 3.

Short-term Programme.

Staff of a 200-bed hospital and the administrative organisation in a secondary unit.

Name	No.	Scale of pay.
		Rs.
Superintendent	1	500—30—800
M. O.'s in-Charge of Departments of Medicine, Surgery, midwifery & Gynaecology	2	400—30—700
M. O. in-Charge of Laboratory	1	400—30—700
House staff	6	250—25—500
Assistant M. O. in charge of Laboratory	2	250—25—500
Part-time Doctors	3	100 p.m.
Matron	1	200—10—300
Assistant Matron	1	150—5—200
Sister Tutor	1 c	140—5—190
Night Sister	1	135—5—185
Theater Sisters	2	125—5—175
Ward Sisters	4	115—5—165
Staff Nurses	19	100—5—175
Staff Nurses	17	75—5—125
Night Staff Nurses	2	75—5—125
House Sister	1	100—5—150
House keeper	1	100—5—150
Senior pharmacist	1	60—3—90
Laboratory technicians	3	60—5—100
Caretaker	1	40—2—60
Laboratory attendants	3	30—2—50
Pharmacist	6	40—2—60
Ward attendants	16	30—2—50
Sweepers	16	25—1—35
Cooks	8	30—2—50
Mali	4	25—1—35
Mistry	1	40—2—60
Clerk	1	150—10—250
Stenographer	1	100—5—200
Clerk	1	75—5—150
Peons	2	25—2—55
X-Ray Staff :		
Senior M. O (X-Ray)	1	400—30—700
Assistant M. O. (X-Ray)	1	250—25—50
Technician	1	150—10—250
Nurse	1	100—5—150
	1	75—5—150
Attendants	2	25—2—55
Dental Service :		
Orthodental Surgeon	1	375—25—750
Dentists	2	250—25—500
Dental hygienists	4	80—5—130

Administrative organisation in a secondary unit.

Name	No.	Scale of pay.
		Rs.
Administrative Medical Officer		1,000—50—1,200
Deputy Administrative Medical Officer	1	500—30—800
Assistant Administrative Medical Officer (Maternity and Child Welfare)	1	400—30—700
Assistant Public Health Engineer	1	400—30—700
Senior Sanitary Inspectors	2	150—10—250
Senior Public Health Nurses	2	150—10—250
Head Clerk		200—10—300
Statistical Clerk	1	200—10—300
Stenographers	3	100—5—200
Clerk (1st Division)	1	150—10—250
Clerks (2nd Division)	2	75—5—150
Inferior servants	5	25—2—55
Dentist	1	250—25—500
Dental Hygienists	2	80—5—130
Attendant	1	30—2—50

APPENDIX 4.

The Population of individual provinces covered by the scheme at the end of first five and ten years.

		End of five years.	End of ten years.
1.	Madras	9,600,000	25,920,000
2.	Bombay	7,600,000	11,400,000
3.	Bengal	10,400,000	31,200,000
4.	U. P.	19,200,000	28,800,000
5.	Bihar	6,400,000	18,560,000
6.	Orissa	2,400,000	4,560,000
7.	Punjab	10,800,000	16,800,000
8.	C. P. & Berar	6,080,000	9,120,000
9.	Assam	2,800,000	5,600,000
10.	Sind	1,600,000	2,560,000
11.	N.-W. F. P.	1,200,000	1,680,000
	Total ..	78,080,000	156,200,000

APPENDIX 5.

A suggested scheme of implementation of the programme in individual provinces during the first ten years.

MADRAS (24 DISTRICTS). 1941 Population 48·56 millions

Year.	PRIMARY UNITS.				SECONDARY UNITS.		
	No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	7	280,000	7	2	1	1	..
5th „ ..	10	400,000	10	2	1	1	..
6th „ ..	13	520,000	13	4	1	1	..
7th „ ..	16	640,000	16	6	2	1	1
8th „ ..	19	760,000	19	8	2	1	1
9th „ ..	23	920,000	23	11	2	1	1
10th „ ..	27	1080,000	27	14	2	1	1

BOMBAY (91 DISTRICTS). 1941 Population 20·85 millions.

Year.	PRIMARY UNITS.				SECONDARY UNITS.		
	No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	7	280,000	7	2	1	1	..
5th „ ..	10	400,000	10	2	1	1	..
6th „ ..	11	440,000	11	3	1	1	..
7th „ ..	12	480,000	12	4	1	1	..
8th „ ..	13	520,000	13	5	1	1	..
9th „ ..	14	560,000	14	7	1	1	..
10th „ ..	15	600,000	15	8	2	1	..

APPENDIX 5—*contd.*

BENGAL (26 DISTRICTS). 1941 Population 60·31 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS. No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd ,, ..	5	200,000	5	1	1	1	..
3rd ,, ..	5	200,000	5	1	1	1	..
4th ,, ..	7	280,000	7	2	1	1	..
5th ,, ..	10	400,000	10	2	1	1	..
6th ,, ..	14	560,000	14	4	1	1	..
7th ,, ..	18	720,000	18	6	2	1	1
8th ,, ..	22	880,000	22	8	2	1	1
9th ,, ..	26	1,040,000	26	11	2	1	1
10th ,, ..	30	1,200,000	30	15	2	1	1

UNITED PROVINCES (48 DISTRICTS). 1941 Population 55·02 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS. No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd ,, ..	5	200,000	5	1	1	1	..
3rd ,, ..	5	200,000	5	1	1	1	..
4th ,, ..	7	280,000	7	2	1	1	..
5th ,, ..	10	400,000	10	2	1	1	..
6th ,, ..	11	440,000	11	3	1	1	..
7th ,, ..	12	480,000	12	4	1	1	..
8th ,, ..	13	520,000	13	5	1	1	..
9th ,, ..	14	560,000	14	6	1	1	..
10th ,, ..	15	600,000	15	8	2	1	1

APPENDIX 5—*contd.*

BIHAR (16 DISTRICTS). — 1941 Population 36·34 millions.

Year	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS. No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd ,, ..	5	200,000	5	1	1	1	..
3rd ,, ..	5	200,000	5	1	1	1	..
4th ,, ..	7	280,000	7	2	1	1	..
5th ,, ..	10	400,000	10	2	1	1	..
6th ,, ..	13	520,000	13	4	1	1	..
7th ,, ..	17	680,000	17	6	2	1	1
8th ,, ..	21	840,000	21	8	2	1	1
9th ,, ..	25	1,000,000	25	11	2	1	1
10th ,, ..	29	1,160,000	29	14	2	1	1

ORISSA (6 DISTRICTS). 1941 Population 8·73 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd ,, ..	5	200,000	5	1	1	1	..
3rd ,, ..	5	200,000	5	1	1	1	..
4th ,, ..	7	280,000	7	2	1	1	..
5th ,, ..	10	400,000	10	2	1	1	..
6th ,, ..	11	440,000	11	3	1	1	..
7th ,, ..	13	520,000	13	4	1	1	..
8th ,, ..	15	600,000	15	6	2	1	1
9th ,, ..	17	680,000	17	8	2	1	1
10th ,, ..	19	760,000	19	10	2	1	1

APPENDIX 5—*contd.*

PUNJAB (30 DISTRICTS). 1941 Population 28·42 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	SECONDARY UNITS. No. of 30-bed hospitals in primary units.	No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	7	280,000	7	2	1	1	..
5th „ ..	9	360,000	9	2	1	1	..
6th „ ..	10	400,000	10	3	1	1	..
7th „ ..	11	440,000	11	4	1	1	..
8th „ ..	12	480,000	12	5	1	1	..
9th „ ..	13	520,000	13	6	1	1	..
10th „ ..	14	560,000	14	7	1	1	..

CENTRAL PROVINCES & BERAR (19 DISTRICTS). 1941 Population 16·81 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensries in primary units each having two emergency and two maternity beds.	SECONDARY UNITS. No. of 30-bed hospitals in primary units.	No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-be hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	7	282,000	7	2	1	1	..
5th „ ..	8	320,000	8	2	1	1	..
6th „ ..	8	320,000	8	2	1	1	..
7th „ ..	9	360,000	9	3	1	1	..
8th „ ..	10	400,000	10	4	1	1	..
9th „ ..	11	440,000	11	5	1	1	..
10th „ ..	12	480,000	12	6	1	1	..

APPENDIX 5—*contd.*

ASSAM (14 DISTRICTS). 1941 Population 10·20 millions.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS. No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	5	200,000	5	1	1	1	..
5th „ ..	5	200,000	5	1	1	1	..
6th „ ..	6	240,000	6	1	1	1	..
7th „ ..	7	280,000	7	2	1	1	..
8th „ ..	8	320,000	8	3	1	1	..
9th „ ..	9	360,000	9	4	1	1	..
10th „ ..	10	400,000	10	5	1	1	..

SIND (8 DISTRICTS). 1941 Population 4·54 million.

Year.	PRIMARY UNITS. No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	SECONDARY UNITS. No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd „ ..	5	200,000	5	1	1	1	..
3rd „ ..	5	200,000	5	1	1	1	..
4th „ ..	5	200,000	5	1	1	1	..
5th „ ..	5	200,000	5	1	1	1	..
6th „ ..	5	200,000	5	1	1	1	..
7th „ ..	6	240,000	6	2	1	1	..
8th „ ..	6	240,000	6	2	1	1	..
9th „ ..	7	280,000	7	3	1	1	..
10th „ ..	8	320,000	8	4	1	1	..

APPENDIX 5—*contd.*

N. W. F. P. (6 DISTRICTS). 1941 Population 3·04 millions.

Year.	PRIMARY UNITS.				SECONDARY UNITS.		
	No. of Primary units (40,000 population) in a district.	Population served.	No. of dispensaries in primary units each having two emergency and two maternity beds.	No. of 30-bed hospitals in primary units.	No. of Secondary units.	No. of 200-bed hospitals in secondary units.	No. of 500-bed hospitals.
1st Year ..	5	200,000	5	1	1	1	..
2nd ,, ..	5	200,000	5	1	1	1	..
3rd ,, ..	5	200,000	5	1	1	1	..
4th ,, ..	5	200,000	5	1	1	1	..
5th ,, ..	5	200,000	5	1	1	1	..
6th ,, ..	5	200,000	5	1	1	1	..
7th ,, ..	6	240,000	6	2	1	1	..
8th ,, ..	6	240,000	6	2	1	1	..
9th ,, ..	6	240,000	6	2	1	1	..
10th ,, ..	7	280,000	7	3	1	1	..

APPENDIX 6.

Total provision of hospital beds of all types at the end of the first five and ten years.

	End of first five years.	End of first ten years.
General beds—		
1. Primary unit dispensaries	7,808	15,620
2. Thirty-bed hospitals	12,120	59,700
3. 200-bed hospitals	43,200	43,200
4. 500-bed hospitals	..	69,500
5. Medical colleges	17,000	32,600
	80,128	220,620
Tuberculosis beds	6,600	13,200
	86,728	233,820
Leprosy	14,000	28,000
	100,728	261,820
Mental beds	9,000	18,000
	109,725	279,820
Existing	73,000	73,000
Total	182,782	352,820
Aproximately	183,000	353,000
Population	330 millions	345 millions.
Rate per 1,000 population	0·55	1·03

APPENDIX 7.

A provincial nutrition organisation.

Name.	No.	Scale.
Staff—		
Chief Nutrition Officer	1	Rs. 600—40—1,000.
Field—		
Field workers	3	Rs. 300—20—500.
Inferior servants	3	Rs. 25—2—55.
Laboratory—		
Chief Assistant	1	Rs. 300—20—500.
(*Chemistry & Biochemistry*)		
Chemist	1	Rs. 150—10—250
Laboratory assistants	3	Rs. 50—5—100.
Animal attendants	3	Rs. 25—2—55.
Inferior servants	3	Rs. 25—2—55.
Office—		
Stenographer	1	Rs. 75—5—150.
Typist clerks	2	Rs. 60—5—100.
Statistician	1	Rs. 150—10—250.
Artist	1	Rs. 100—5—150.
Inferior servants	2	Rs. 25—2—55.

APPENDIX 8.

A. Provincial venereal diseases organisation and its expenditure.

Details of Expenditure.

			1st five years Rs.	Ten years. Rs.
1. *Provincial organisation—*				
1st year.	1,80,696			
2nd „	1,83,898			
3rd „	1,87,081			
4th „	1,90,273			
5th „	1,93,446	9,35,394 × 11 =	1,02,89,334	
6th „	1,97,108			
7th „	2,00,317			
8th „	2,03,948			
9th „	2,06,738			
10th „	2,09,949	19,53,454 × 11 =		2,14,87,17
2. *District organisation—*				
1st year	13,497			
2nd „	14,039			
3rd „	14,582			
4th „	15,125			
5th „	15,668	72,911 × 216 =	1,57,48,776	
6th „	16,382			
7th „	16,934			
8th „	17,485			
9th „	18,037			
10th „	18,589	1,60,338 × 216 =		3,46,33,008
3. *Purchase of Drugs—*				
1st year	4,000			
2nd „	4,000			
3rd „	4,000			
4th „	6,000			
5th „	8,000	26,000 × 216 =	56,16,000	
6th „	10,400			
7th „	12,800			
8th „	15,200			
9th „	18,400			
10th „	21,600	1,04,400 × 216 =		2,25,50,400
Total ..			3,16,54,110	7,86,71,402

STAFF.

Name.	No.	Scale.
1. Provincial Organisation—		
Officer in charge	1	Rs. 600—40—1,000.
Assistant officers in charge	2	Rs. 500—30—800.
Propaganda officer	1	Rs. 350—25—500.
Social worker supervisor	1	Rs. 250—25—500.
Propaganda workers	8	Rs. 100—5—150.
Clerks	3	Rs. 100—5—200.
Accountant	1	Rs. 150—5—250.
Stenographers	2	Rs. 100—5—200.
Inferior servants	2	Rs. 25—2—55.
2. *District clinic organisation—*		
Medical officer	1	Rs. 250—25—500.
Social worker	1	Rs. 125—5—150
Clerk	1	Rs. 100—5—200.
Peon	1	Rs. 25—2—55.
Sweeper	1	Rs. 25—1—35.
3. Provision for purchase of drugs—		

APPENDIX 9.

Estimates of Expenditure on Mental Institutions.

Fisrt five years.

	Non-recurring Rs.	Recurring Rs.
(1) Improvements in mental hospitals.		
(*a*) Madras	10,00,000	
(*b*) Poona	10,00,000	
(*c*) Agra	25,00,000	
(*d*) Nagpur	25,00,000	
(*e*) Lahore (new hospital 1,500 beds)	50,00,000	
(*f*) Ranchi (European Mental Hospital)	10,00,000	
(*g*) Ranchi (Indian Mental Hospital)	10,00,000	
(*h*) Thana (Converted into Mental Deficiency or Senile Home)	5,00,000	
	1,45,00,000	
(2) Opening of two new mental hospitals in Bombay & Calcutta	22,00,000	
	1,67,00,000	
(3) Beds—9,000 (Total number in all the above eight mental hospitals including 2 new ones) @ Rs. 1,000/- per bed × 5 years		4,50,00,000
(4) Training of nurses in mental hospitals—2 years course—100 nurses to be admitted for training each year. Total number of nurses that require stipends etc. in first five years=900, @ 75/- per month 900×75 × 12 months		8,10,000
(5) Training of doctors in the United Kingdom 20 × 8,000 × 5		8,00,000
Doctors.		
(6) Salaries of Central and Provincial Mental Officers:		
Centre		1,66,560
Provinces		8,80,550
(7) Maintenance charges o capital works		10,02,000
Total (recurring)		4,86,59,110

APPENDIX 9—*contd.*

ESTIMATES OF EXPENDITURE ON MENTAL INSTITUTIONS.

Second five years.

	Non-recurring (Rs.)	Recurring (Rs.)
(1) Improvements to the remaining mental hospitals: (*a*) Ahmedabad (500 beds) .. .. .. (*b*) Ratnagiri ,, (*c*) Dharwar ,, (*d*) Calicut ,, (*e*) Waltair ,, (*f*) Bareilly—(100 beds) (*g*) Benares (*h*) Hyderabad (Sind) (*i*) Assam—(1,000 beds)	@ Rs. 10,00,000 per hospital 10,00,000 × 9 =	
	90,00,000	
(2) Opening of five new mental hospitals in Madras, Punjab, U.P., Bihar and Central Provinces, each with 500 beds, @ Rs. 22 lakhs per hospital for building and equipment	1,10,00,000	
(3) Increasing the bed strength of the two new mental hospitals in Calcutta and Bombay, started in the first five years, from 200 to 500 beds	22,00,000	
Total (non-recurring) .. Rs.	2,22,00,000	
Recurring :—		
(4) Total beds (1st five years 9,000 + 2nd five years 9,000 = 18,000) @ Rs. 1,000 per bed per year for five years ..		9,00,00,000
(5) Training of nurses—50 nurses to be admitted each year for two years course. Each nurse gets Rs. 75 p.m. as stipend during training 550×75×12= ..		4,95,000
(6) Training of doctors: 20×8,000×5—		8,00,000
(7) Salaries of Central and Provincial Mental Officers attached to the respective health organisations	Centre	1,73,460
	Provinces	10,32,350
(8) Maintenance charges on capital works		38,37,000
Total (recurring) ..		9,63,37,810
Grand Total (recurring) of the 1st ten years ..		14,49,96,920

APPENDIX 9—*concld.*

Mental Health Organisation.

(Further details.)

Centre:

	1st year.	2nd year.	3rd year.	4th year.	5th year	6th year.	7th year.	8th year.	9th year.	10th year.
	Rs.									
Mental Officer at the Centre @ Rs. 1,900—50—2,100	22,800	23,400	24,000	24,600	25,200	25,200	25,200	25,200	25,200	25,200
Pension @ Rs. 176 p.m. ..	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112
Leave salary @ 15 p.c. ..	3,420	3,510	3,600	3,690	3,780	3,780	3,780	3,780	3,780	3,780
Allowances	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Total ..	31,932	32,622	33,312	34,002	34,692	34,962	34,692	34,692	34,692	34,692

1st five years. Rs. 1,66,560.
Second five years. Rs. 1,73,460.
1st ten years. Rs. 3,40,020.

Provinces:

	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
Provincial Mental Officer @ Rs. 600—40—1,000 plus ..	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
250 p.m. as special pay ..	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Pension @ Rs. 98 p.m. ..	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176
Leave salary @ 15 p.c. ..	1,530	1,602	1,674	1,746	1,818	1,890	1,962	2,034	2,106	2,178
Allowances	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Total ..	14,906	15,458	16,010	16,562	17,114	17,666	18,218	18,770	19,322	19,874

1st five years. Rs. 80.050.
Second five years. Rs. 93,850.
1st ten years. Rs.1,73,900.

For eleven Provinces:

	Rs.	
1st five years: 80,050×11	= 8,80,550	1st ten years=Rs. 19,12,900.
Second five years: 93,850×11	=10,32,350	

APPENDIX 10.

Estimates of Expenditure on Leprosy Organisations:

Leprosy (Centre).

Central Leprosy Institute	1st five years. Rs.	1st ten years. Rs.
Non-recurring expenditure	5,00,000	5,00,000
Recurring:		
Maintenance @ 3 p.c. per year on the above capital works	30,000	1,05,000
*Annual recurring cost including salaries of staff, etc.	4,30,386	9,39,462
Total (recurring) ..	4,60,386	10,44,462

*Annual recurring cost from year to year:

	Rs.	1st 5 years.	1st ten years.
1st year	79,782		
2nd year	82,930		
3rd year	86,077		
4th year	89,223		
5th year	92,372	4,30,386	
6th year	95,520		
7th year	98,663		
8th year	1,01,815		
9th year	1,04,963		
10th year	1,08,110		9,39,462

APPENDIX 10—*contd.*

Staff of the Central Leprosy Institute (Further details).

	No.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
Chief @ 1,250—50—1,750 ..	1	15,000	15,600	16,200	16,800	17,400	18,000	18,600	19,200	19,800	20,400
Senior Assistants— @ Rs. 800—40—1,200	2	19,200	20,160	21,120	22,080	23,040	24,000	24,960	25,920	26,880	27,840
Junior Assistants— @ Rs. 600—30—900	2	14,400	15,120	15,840	16,560	17,280	18,000	18,720	19,440	20,160	20,880
Social worker— @ Rs. 375—25—750	1	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600	6,900	7,200
Other staff including ministerial staff including contingencies @ Rs. 15,000 per year		15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Pension & leave salary charges		11,682	12,250	12,817	13,385	13,952	14,520	15,088	15,655	16,223	16,790
Total Rs.		79,782	82,930	86,077	89,225	92,372	95,520	98,668	1,01,815	1,04,963	1,08,110

APPENDIX 10—*contd.*

Leprosy (Provinces).

Non-recurring.	1st five years. Rs.	1st ten years. Rs.
I. Increasing the existing beds provision by 14,000 beds for institutional treatment, in the first five years @ Rs. 1,000 per bed per year	1,40,00,000	..
Adding a similar provision during the second five years	..	2,80,00,000
Total (non-recurring)	1,40,00,000	2,80,00,000
(N.B.—Working details are given below item by item.)		
II. *Recurring.*		
(*a*) Maintenance @ 3 p.c. per year on the above non-recurring expenditure, assuming the same annual increase in the number of beds	8,40,000	37,80,000
(*b*) Annual recurring cost for maintaining, from year to year, the above-metioned beds @ Rs. 400 per bed per year	1,68,00,000	6,16,00,000
(*c*) Cost of Provincial Leprosy organisations, after reduction of the total by one-third, to conform more correctly to varying provincial needs ..	24,94,646	55,79,926
(*d*) Propaganda and publicity @ Rs. 5,000 per province per year	2,75 000	5,50,000
(*e*) Financial help to voluntary organisations @ Rs. 125 per bed per year, for 10,000 beds during the first five years	62,50,000	..
Adding a similar provision during the second five years	..	1,87,50,000
(*f*) Development of Group Isolation Colonies @ Rs. 3 lakhs per year	15,00,000	30,00,000
Total (recurring)	2,81,59,646	9,32,59,926

Details:

(*a*) It is assumed that the increase of 14,000 beds is affected evenly over the first five years, or 2,800 beds are added every year. A similar annual provision will be made during the second five year period also.

Maintenance charges on:	Maintenance @ 3 p.c. p.a. 1st five years.	1st ten years
1st year capital expenditure Rs. 28,00,000	2,36,000	7,56,000
2nd " " "	2,52,000	6,72,000
3rd " " "	1,68,000	5,88,000
4th " " "	84,000	5,04,000
5th " " "		4,20,000
	8,40,000	
6th " " "		3,36,000
7th " " "		2,52,000
8th " " " ..		1,68,000
9th " " "		84,000
10th " " "		..
		37,80,000

APPENDIX 10—*concld.*

(*b*)

	New beds.	Total beds.	Total maintenance charges. Rs.	
1st year	2,800	2,800	11,20,000	
2nd year	2,800	5,600	22,40,000	
3rd year	2,800	8,400	33,60,000	
4th year	2,800	11,200	44,80,000	Rs.
5th year	2,800	14,000	*56,00,000*	1,68,00,000
6th year	2,800	16,800	67,20 000	
7th year	2,800	19,600	78,40,000	
8th year	2,800	22,400	89,60,000	
9th year	2,800	25,200	1,00,80,000	Rs.
10th year	2,800	28,000	1,12,00,000	6,16,00,000

(*c*) Details of annual expenditure on Provincial Leprosy Organisations.

	Rs.		
1st year	62,333		
2nd year	65,553		
3rd year	67,554		
4th year	70,764		
5th year	73,975	$\frac{340,179 \times 11 \times 2}{3}$	= 24,94,646
6th year	77,644		
7th year	80,871		
8th year	84,320		
9th year	87,328		
10th year	90,557	$\frac{7,60,899 \times 11 \times 2}{3}$	= 55,79,920

(*d*) $5000 \times 11 \times 5$ = 2,75,000

1st ten years 2,75,000+2,75,000 .. .. = 5,50,000

(*e*) 1st five years = $10,000 \times 125 \times 5$ = 62,50,000

2nd five years = $20,000 \times 125 \times 5$ = 1,25,00,000

Total ten years .. 1,25,00,000+62,50,000 = 1,87,50,000

(*f*) 1st five years .. 3,00,000×5 = 15,00,000

Ten years .. .. 15,00,000+15,00,000 30,00,000

APPENDIX 11.

ESTIMATE OF DOCTORS REQUIRED AT THE END OF FIRST FIVE YEARS AND FIRST TEN YEARS.

		First five years.		First ten years.
Medical Colleges :				
The estimate for a medical college has been based on the suggestions put forward by the Goodenough Committee, namely, for preclinical subjects 69 and for clinical subjects 119 in each college.				
Total required	188×24	=4,512	43×188	=8,084
Primary Unit :				
2 Doctors for each primary unit ..	2×1952	=3,904	2×3905	=7,810
30 Bed hospital : 1 Doctor each ..	1×404	=404	1×1990	=1,990
Secondary Unit :				
3 M.O.'s for each secondary unit ..	3×216	=648	3×355	=1,065
200 Bed hospitals : 15 Doctors for each	15×216	=3,240	15×216	=3,240
500 Bed hospital	..	..	15×139	=2 085
Mobile, dental organisations	..	..	1×355	=355
District headquarters organisation : two doctors for each	2×216	=432	..	=432
Central Directorate : ..	..	21	..	21
Provincial Directorate : ..	20×11	=220	..	220
Tuberculosis :				
5 Doctors for each 200-bed hospital 1 : 40	5×33	=165	5×66	=330
Main clinics 3 for each	3×33	=99	3×66	=198
District clinics: 2 for each	2×183	=366	2×366	=732
Travelling tuberculosis clinics ..	..	..	1×710	=710
Mental diseases :				
1 Doctor for 50 beds : 9,000 new beds in each period	..	180	..	360
Malaria :				
Headquarters	..	44	..	44
Deputies	..	..	..	22
Control Unit, 10 for each province ..	10×11	=110	25×11	=275
Leprosy :				
14,000 beds, 1 doctor for 40 ..	..	350	..	700
Venereal diseases :				
Provinces	5×11	=55	10×11	=110
Districts	1×216	=216	2×216	=432
School health :				
2 for each province	2× 11	= 22	4×11	=44
Nutrition :				
5 for each Province	5× 11	=55		55
Totals		15,043		29,314

APPENDIX 12.

Estimate of nurses for hospitals and dispensaries required at the end of first five and first ten years.

		First five years.	*First ten years.*
Primary units dispensaries	1952×1=	1,952	3905×1=3,905
30-bed hospitals : 8 nurses per hospital	404×8=	3,232	1990×8=15,920
Secondry Unit.			
200 bed hospitals 50 nurses per hospital	216×50=	10,800	216×50=10,800
500 bed hospitals 125 nurses per hospital	..		139×125=17,375
Hospitals attached to Medical Colleges.			
1,000 beds in each and 250 nurses ..	250×24=	6,000	250×43=10,750
Tuberculosis.			
200 bed hospital for every centre, each hospital will have 20 nurses ..	33×20=	660	66×20=1,320
Travelling tuberculosis clinics : One nurse in each		Nil	710×1=710
Mental.			
9,000 new beds in each period, 1 nurse for 20 beds		450	900
Leprosy.			
To provide for 14,000 beds in each period : 1 nurse for 20 beds		700	1,400
	Totals	23,794	63,080

Public health nurses for outdoor duty.

Primary Unit.			
Public health nurses per unit ..	1952×4=	7,808	3905×4=15,620
Secondary Unit.			
2 Senior public health nurses per unit ..		216×2=432	355×2=710
Tuberculosis.			
Three public health nurses for every main clinic		33×3= 99	66×3=198
Two for every district clinic		183×2=366	366×2=732
School Health.			
1 Senior public health nurses for every Province		11×1=11	22×1=22
		8,716	17,282
Total number of nurses required (public health nurses and hospital nurses)		32,510	80,362

APPENDIX 13.

Nurseries in the Soviet Union.

(Extract *from Professor Henry E. Sigerist's book "Socialised Medicine in the Soviet Union".*)

The Soviet nursery serves a three-fold purpose. It liberates the working woman, it cares for the child, and it educates the child as well as the mother. The director of the nursery is generally a woman physician and the staff consists of doctors, psychologists, and nurses. Most nurseries have a capacity of from about 50 to 125 children. They are organised in three divisions : one for the infants under one year, one for children in the second year, and one for those in the third year. Some nurseries are operated in shifts according to the working hours of the mothers.

Today the equipment and routine of Soviet nurseries are more or less standardised and similar institutions are found in Moscow and in the Caucasus, as well as in Central Asia and Siberia. On her way to work the mother brings her child to the nursery, undresses him, puts the clothes in a locker, and delivers the nude child to a nurse who weighs him and gives him to the pediatrician for a routine examination. The temperature is taken and if any symptoms are discovered, the child is brought to the infirmary or, in case of more serious illness, to the hospital. If a child is found to be dirty and neglected, the mother and child are sent home and a visiting nurse goes to inspect it. Once in the nursery, the child is dressed in nursery clothing and joins the children of his age. Small infants are kept in cribs; they have toys to play with, and at regular intervals the mothers come to nurse them. The mother removes her working dress, and puts on a sterilised gown especially made for the purpose with slits at the breasts. After having fed the child, the mother receives her own lunch in the nursery free of charge. In such a way a very close co-operation develops between the nursery workers and the mothers, who are in daily contact with pediatricians. In the nurseries, mothers learn how a child should properly be dressed and fed. They learn that fresh air is not harmful to children, as was believed for centuries and is still believed in many parts of Europe. Home visitors inspect the living places regularly in order to find out under what conditions the children live.

Once a child begins to crawl, he enters the second group. He then plays in the pen and has a different set of toys. Gradually he is taught to develop certain habits, such as bathing and eating. He learns to urinate and go to the stool at definite times. Special tables accommodating three children have been devised for meals, on the assumption that one nurse can feed three children. Eating in groups also develops a certain spirit of co-operation for regardless of how greedy a child may be, he soon learns that he has to await his turn. At the age of one year and nine months a child is expected to be able to undress alone and at the age of two and a half years he is expected to make his own bed and to dress himself. Part of the standard equipment of every nursery is a staircase and slide. At the age of two the child is expected to be able to walk upstairs, and at two years and nine months, to walk downstairs without holding on to the banister. Older children play in groups ; their toys are automobiles, locomotives, aeroplanes, tractors, besides, of course, dolls and teddy bears. They sing and dance

Whenever possible, they play out-of-doors shovelling snow, and chopping wood. In the summer many nurseries are moved to the country. The children are brought in contact with nature and labour, and there is no more touching sight than to see a brigade of youngsters watching a herd of cattle or observing the work of a tractor and listening to an explanation of its use.

At the age of three the child leaves the nursery as an independent little citizen, who is healthy in mind and body and does not have to rely on adults in his daily living habits. During these three years the mother has had a thorough education that will prove valuable to her in rearing later children.

APPENDIX 14.

Provincial Malaria Organisation.

(a) Provincial Headquarters staff:

	First five years.	Second five years.
Assistant Director of Health Services (Malariology)	1	
Entomologist	1	
Sanitary Engineer	1	
Overseers	4	The same staff.
Draftsman	1	
Antimalaria Officer	1	
Laboratory Assistants	5	
Antimalaria Assistants	2	
Clerks	3	
Insect collectors	8	
Inferior servants	2	
Sweepers	2	

(b) Regional Organisation.—While five Deputy Assistant Directors are eventually to be provided in all the major provinces none will be appointed during the first five years and only two such posts will be created during the second five years.

First five years.	Second five years.	
	Deputy Assistant Directors of Health	2
Nil	Clerks	2

(c) Malaria Control Units :

Staff of one unit :—		Number of malaria control units to be established during the	
		First five years.	Second five years.
Antimalaria assistant	1		
Laboratory assistants	2	10	15
Malaria Supervisors	5		
Mistry	1		
Field workers	25		

List of equipment required for the Provincial Headquarters Unit.

1. Microscopes, high power .. .. Ten.
2. Microscopes, dissecting, small .. .. Ten.
3. Microscopes, dissecting, binocular .. .. .. Two.
4. Other laboratory equipment of the type of hand lenses, breeding cages, glassware, balance, primus stoves, etc., including chemicals .. .. As required (A yearly allotment of Rs. 800/-)
5. Surveyor's equipment for the sanitary Engineer and his staff
6. Bicycles .. .. Ten.
7. Typewriters, standard .. .. Two.
8. Typewriters, portable .. .. One.
9. Epidiascope for instructional purposes .. .. .. One.
10. Cinema Projector instructional purposes .. .. One.

List of equipment required for the Provincial control Unit.

(*a*) Transport—

(1) Trucks, 3/4 ton 4× 4, weapons carrier .. .. Two.

(2) Trucks, 3/4 ton, 4 × 4 (Jeep) .. .. .. One.

(*b*) Tentage—

Tents, 160 pound .. .. Three.

(*c*) Sprayers, spraying equipment, etc.—

(1) Petrol driven sprayers, 1 to 2 H. P. .. .. .. Four.

(2) MISH type hand sprayers .. .. One hundred.

(3) Knapsack sprayers, oil .. .. Twelve.

(4) Stirrup pumps, double barrel, complete with special nozzles, lances, etc. .. .. Twenty.

(5) Empty drums, 40 gallons .. .. Five.

(6) Empty drums, 5 gallons .. .. Twenty.

(7) Empty drums, 1 gallon .. .. Twenty.

(8) Buckets, 3-4 gallons .. .. Forty.

(*d*) Field Worker's Implements—

(1) Hoes .. .. Two dozen.

(2) Pick axes .. .. One dozen.

(3) Machetes .. .. Two dozen.

(4) Axes, wood cutting .. .. Six.

(*e*) Laboratory equipment such as hand lenses, breeding cages, catching apparatus, glassware, balance, primus stoves, etc. As required (A yearly allotment of Rs. 3,000/-

(*f*) Portable typewriter .. .. One.

APPENDIX 15.

Model Mosquito Ordinance.

United States Public Health Service.

Section 1.—It shall be unlawful for any person to have, keep, maintain, cause, or permit within the corporate limits of.....any collection of standing or flowing water in which mosquitoes breed or are likely to breed, unless such collection of water is treated so as effectually to prevent such breeding.

Section 2.—Collections of water in which mosquitoes breed or are likely to breed are those contained in ditches, ponds, pools, excavations, holes, depressions, open cess-pools, privy vaults, fountains, cisterns, tanks, shallow wells, barrels, troughs (except horse troughs in frequent use), urns, cans, boxes, bottles, tubs, buckets, defective house roof gutters, tanks or flush closets, or other water containers.

Section 3.—The natural presence of mosquito larvae in standing or running water shall be evidence that mosquitoes are breeding there.

Section 4.—Collections of water in which mosquitoes breed or are likely to breed shall be treated by such one or more of the following methods as shall be approved by the health officer :—

(Here follows description of methods).

Section 5.—In case the person responsible for the condition of premises on which mosquitoes breed or are likely to breed, fails or refuses to take necessary measures to prevent their breeding within three days after notice in writing has been given him by the health officers, or within such longer time after such notice as may be specified in the notice, the said person responsible shall be deemed guilty of a violation of this ordinance ; and for each day after the expiration of three days from the day on which such notice is given him, or for each day after the expiration of the time specified in the notice, as the case may be, that the person responsible fails or refuses to take such measures, the said person responsible shall be deemed guilty of a separate violation of this ordinance, and in case of such failure or refusal of the person responsible, the health officer is authorised to take necessary measures to prevent the breeding of mosquitoes, and all necessary costs incurred by the health officer fo that purpose shall be a charge against the person responsible.

Section 6.—For the purpose of this ordinance the person responsible for the condition of any premises is the person using or occupying the same ; or, in case no person is using or occupying the premises, the person who by law is entitled to the immediate possession of the same ; or in case the premises are used or occupied by two or more tenants of a common landlord; each tenant, however, is responsible for that part of the premises, which he occupies to the exclusion of the other tenants ; provided, that in case the premises are occupied by a tenant under an yearly or monthly tenancy, or under a lease for not more than a year, or under any lease whereby the lessor is expressly or impliedly obligated to keep the premises in repair, and the collection of standing or flowing water in which mosquitoes breed or are likely to breed is owing to the disrepair of the building or buildings. or to any natural quality of the premises, or to any conditions that existed at the time when the tenant entered into possession, or to anything done on the

premises by the landlord during the existence of the tenancy or lease, then and in such case, the landlord is the person responsible ; *provided further*, that any person who has caused to exist on any premises of which he is not the owner, landlord, occupant, or tenant any collection of water in which mosquitoes breed or are likely to breed is responsible, as well as the owner, landlord, tenant, or occupant, as the case may be.

Section 7.—For the purpose of enforcing the provisions of this ordinance the health officer, or his lawful subordinate, may at all reasonable times enter in and upon any premises within his jurisdiction.

Section 8.—Any person found guilty of a violation of this ordinance, as described in Section 5 hereof, shall be punished by a fine of not less than one dollar ($ 1) and not more than twenty-five dollars ($ 25).

Section 9.—This ordinance shall be in full force and effect on and after the (.....) day from the day on which it is approved.

APPENDIX 16.

Destruction of Mosquitoes.

Straits Settlements.

Ordinance No. 174.

To provide for the destruction of mosquitoes :—

1. *Short title. Application.*—This Ordinance shall apply to all property of every description including that belonging to or vested in or maintained by the Crown.

2. *Interpretation.*—In this Ordinance, unless there is something repugnant in the subject or context,

"House" ..	includes dwelling house, warehouse, office, shop, school and any other building in which persons are employed ;
"Mosquito" ..	means the insect and includes its eggs, larvae and pupae ;
"Owner" ..	includes the person for the time being receiving the rent of any premises, whether on his own account or as agent or trustee or as receiver, or who would receive the same if such land or house were let to a tenant, and includes the Crown ;
"Occupier" ..	means the person in occupation of any premises or having the charge, management or control thereof either on his own account or as agent of another person but does not include a lodger ;
"Premises" ..	includes mossuages, buildings, lands, easements and hereditaments of any tenure, whether open or enclosed, whether built on or not, whether public private, and whether maintained or not under statutory authority ;
"Sanitary Authority" ..	means within any Municipal limits, the Municipal Health Officer and in any Rural District, the Rural Board Health Officer.

3. *Entry and inspection by sanitary authority or authorised person.*—(1) The sanitary authority or any person authorised by him either generally or specially in that behalf in writing may, between the hours of six in the morning and six in the evening, with or without assistants, enter and examine any premises in order to ascertain whether they or any thing thereon are in a condition favourable to the propagation or harbouring of mosquitoes ; provided that no person shall, unless with the consent of the occupier, thereof, enter any house under this section without twelve hours' previous notice being given to the occupier, if any, thereof.

(2) Subject to such notice as aforesaid, the owner and the occupier of any premises shall permit the sanitary authority or any person so authorised by him as aforesaid with or without assistants to have access thereto and to any part thereof for the purpose of subsection (1) and shall supply all such information as the sanitary authority requires and as is reasonably necessary for that purpose.

4. *General power of sanitary authority to order action.*—(1) The sanitary authority, if as a result of any such examination it appears to him that any premises or anything thereon is favourable to the propagation or harbouring of mosquitoes, may, by order in writing addressed to the owner or occupier of such premises direct him within a specified time to take such specified measures with regard to the premises or for the treatment, destruction or removal of anything thereon as may bring them into a condition not favourable to the propagation or harbouring of mosquitoes.

(2) In particular and without prejudice to the generality of the powers aforesaid the sanitary authority may in such order direct the owner or occupier to drain any land or fill up inequalities in the surface thereof so as to keep the land permanently free from standing water to the extent required by the order.

5. *Power of sanitary authority to order covering of tanks, etc.*—(1) The sanitary authority may, by order in writing, direct the occupier of any premises so to cover within a specified time and keep continuously covered any specified vessel or receptacle, including any tank or cistern, on or appertaining to the premises that mosquitoes shall be unable to enter such vessel or receptacle.

(2) Where any premises are unoccupied such order may be addressed to the owner thereof as if he was the occupier.

6. *Power of sanitary authority to take preventive measures.*—The sanitary authority or any person authorised by him, either generally or specially in that behalf in writing may also, with the consent of the occupier, take such measures as are reasonably necessary.—

(*a*) to destroy mosquitoes wherever found ;

(*b*) to collect and remove empty tins, cans, bottles or other receptacles in which mosquitoes may breed ;

(*c*) to cut down and remove any grass, bamboo stumps, fern or undergrowth in which mosquitoes are likely to breed or be harboured ;

(*d*) to bring any water or swamp into a condition not favourable to the propagation or harbouring of mosquitoes ;

(*e*) to fill with concrete or otherwise treat holes or hollows in trees which hold or are likely to hold water.

7. *Enforcement of order.*—(1) If the owner or occupier of any premises on whom an order under section 4 or 5 has been served fails to comply with the terms thereof, the sanitary authority or any person authorised by him, either generally or specially in that behalf in writing may enter upon or into the said premises with such assistants and things as are necessary and may perform and do thereon or therein all acts and things required by the said order to be performed or done, and the cost thereof shall be recoverable from the owner or occupier by the sanitary authority.

(2) If the amount of such costs is not paid by the party liable to pay the same within seven days after demand, such amount may be reported to a Police Court and recovered in the same way as if it was a fine imposed by such Court.

(3) Nothing in this section shall affect any liability of any person to prosecution and punishment under section 8.

8. *Penalty for default.*—(1) Any owner or occupier of any premises, on whom an order under section 4 or 5 has been served, who neglects to comply with the terms thereof, shall be liable, on conviction by a Police Court, to a fine not exceeding five hundred dollars or to imprisonment of either description for a term which may extend to six months.

(2) No person shall be punishable under this section for neglect to comply with any order in respect whereof he has appealed as hereinafter provided unless such order has been confirmed on appeal.

10. *Persons unable to meet necessary expenditure.*—If it appears to the sanitary authority after due inquiry that any person has not the means to meet the necessary expenses of doing anything required to be done by him under this Ordinance, such necessary expenses may be met from Municipal or Rural Board Funds, as the case may be.

11. *No compensation.*—No person shall be entitled to compensation for any expense incurred or damage occasioned by any order given or act done in pursuance of this Ordinance or any rule made thereunder unless such damage has been occasioned maliciously or without reasonable cause.

13. *Penalty for obstructing sanitary authority.*—Any person, who obstructs the sanitary authority or any person authorised by him or any person engaged in carrying out this Ordinance in any act authorised by this Ordinance, shall be liable, on conviction by a Police Court, to a fine not exceeding two hundred dollars or to imprisonment of either description for a term which may extend to three months.

14. *Penalty for injuring works, etc., executed, etc., by sanitary authority.*—Any person who, without the consent of the sanitary authority, interferes with, injures, destroys or renders useless any works executed or any materials or things placed in, under or upon any premises by or under the orders of the sanitary authority, shall be liable, on conviction before a Police Court, to a fine not exceeding five hundred dollars, and the sanitary authority may in addition recover from such person in the same manner as if it was fine imposed by a Police Court, such costs and expenses as it incurs in re-executing the works or replacing the materials or things so interfered with, injured, destroyed or rendered useless.

15. *Duty of owner and occupier to protect works for destruction of mosquitoes.*—(1) Where the sanitary authority or any department of Government or the Municipality has constructed any works with the object of preventing the breeding of mosquitoes whether before or after the coming into force of this Ordinance the onwer and the occupier of the premises on which such works stand shall prevent such premises being used in any manner whatsoever that is likely to cause or has caused the deterioration or to lessen the efficiency of such works.

(2) *Penalty.*—Where any such premises are used in such a manner as to lessen the full efficiency of such works the owner and the occupier of such premises shall subject to sub-section (4) be liable on conviction before a Police Court to a fine not exceeding five hundred dollars and the sanitary authority may enter upon the premises and execute any necessary repairs or work thereon and recover from such person in the same manner as if it was fine imposed by a Police Court such costs and expenses as it thereby incurs

APPENDIX 17.

ANTIMOSQUITO PROVISION IN THE BOMBAY MUNICIPAL ACT.

Section 3.—Definition of terms :—

(*t*) " *Water work* " includes a lake, stream, spring, pump, reservoir, cisterns, tank, duct, whether covered or open, sluice, mainpipe culvert, engine and any machinery, land, building or thing for supply or used for supplying water.

(*z*) " *Nuisance* " includes any act, omission, place or thing which causes or is likely to cause injury, danger, annoyance or offence to the sense of sight, smelling or hearing, or which is or may be dangerous to life or injurious to health or property.

(*aa*) " *Dangerous Disease* " means cholera and any endemic, epidemic or infectious disease by which the life of man is endangered.

Section 61.—Matters to be provided for by the Corporation.—It shall be incumbent on the corporation to make adequate provision, by any means of measures which is lawfully competent to them to use or take, for each of the following matters, namely :

(*d*) The reclamation of unhealthy localities, the removal of noxious vegetation and generally the abatement of all nuisances.

(*g*) Measures for preventing and checking the spread of dangerous diseases.

Section 64.—*Special functions of the Commissioner.*—(3) subject, whenever it is in this Act expressly so directed, to the approval or sanction of the corporation or the standing committee and subject also to all other restrictions, limitations and conditions imposed by this Act, the entire executive power for the purpose of carrying out the provisions of this Act vests in the Commissioner.

Section 68.—*Municipal officers may be empowered to exercise certain of the powers of the Commissioner.*—(1) Any of the powers, duties or functions conferred or imposed upon or vested in the Commissioner by any of the sections, sub-sections, or clauses mentioned in sub-section (2) may be exercised, performed or discharged, under the Commissioner's control and subject to his revision and to such conditions and limitations, if any, as he shall think fit to prescribe, by any municipal officer whom the Commissioner, generally or specially empowers in writing in this behalf; and in each of the said sections, sub-sections and clauses the word " Commissioner " shall, to the extent to which any municipal officer is so empowered, be deemed to include such officer.

(2) The sections, sub-sections and clauses of this Act referred to in sub-section (1) are the following namely :—

279, 374, 377, 381, 381A, 488, 489.

Section 274.—*Provisions as to cisterns.*—(1) The Commissioner may whenever it shall appear to him to be necessary, by written notice require, that any premises furnished with a private water-supply from any municipal water-work shall, within a reasonable period, which shall be prescribed in the said notice, be provided with a storage cistern of such size, material, quality and description, and with such fittings and placed in such a position and with such means of access as he thinks fit.

Section 279.—*Power to cut off private water-supply or to turn off water.*—(1) The Commissioner may cut off the connection between any municipal water-work and any premises to which a private water-supply is furnished by the corporation or turn off the water from such premises in any of the following cases, namely :—

(*b*) if the owner or occupier of the premises neglects, within the period prescribed in this behalf in any notice given under sub-section (1) of section 274, to comply with any requisition made to him by the Commissioner regarding the provision of a storage-cistern, or the means of access thereto, provided that.....the Commissioner shall not take action without the sanction of the standing committee.

Section 374.—*Power to inspect premises for sanitary purposes.*—The Commissioner may inspect any building or other premises for the purpose of ascertaining the sanitary conditions thereof. (But see Section 488).

Section 377.—*Neglected premises.*—If it shall appear to the Commissioner that any premises are overgrown with rank and noisome vegetation or are otherwise in an unwholesome or filthy condition, or, by reason of their not being properly enclosed are resorted to by the public for purposes of nature, or are otherwise a nuisance to the neighbouring inhabitants, the Commissioner may, by written notice, require the owner or occupier of such premises to cleanse, clear or enclose the same, or, with the approval of the standing committee, may require him to take such other order with the same as the Commissioner thinks necessary.

Section 381.—*Filling in of pools, etc., which are a nuisance.*—(*i*) If in the opinion of the Commissioner—

(*a*) any pool, ditch, tank, well, pond, quarry-hole, drain, watercourse or any collection of water, or

(*b*) any cistern, receptacle for water or any article or thing capable of containing water whether or not such cistern or receptacle, article or thing contains water and is within or outside a building, or

(*c*) any land on which water accumulates or is likely to accumulate, or

(*d*) any premises or part of any premises occupied or unoccupied, or under construction, reconstruction or demolition, is or is likely to become a breeding place of mosquitoes or which is in other respects, a nuisance as defined in clause (*z*) of section 3.

(*ii*) The Commissioner may by notice in writing require the person by whose act, default or sufferance, a nuisance arises, exists or continues, or is likely to arise, and the owner, lessee or occupier of the land, building or premises on which the nuisance arises, exists or continues or is likely to arise, or any one or more of such person, owner, lessee and occupier, to remove, discontinue or abate the nuisance by taking such measures and by executing such work in such manner with such materials as the Commissioner shall prescribe in such notice.

(*iii*) The Commissioner may also by any notice under clause (*ii*), or by another notice, served on such person, owner, lessee and occupier, or on any one or more of them require them or any one or more of them to take all steps requisite or necessary to prevent a recurrence of the nuisance, and may, if he thinks it desirable, specify any work to be executed or measures to be carried

out for that purpose, and may serve any further such notice notwithstanding that the nuisance may have been abated or removed, if he considers that it is likely to recur.

Provided that if at any time within six months from the date of the service of any such notice, the nuisance recurs through the failure of the person or persons upon whom such notice has been served to comply with the requirements contained in such notice, such person or persons shall be liable without any further notice to the penalties provided in this Act for offences under this section.

(*iv*) Where the nuisance arises or exists or is likely to arise or recur in connection with the construction, reconstruction or demolition of any premises, or part of any premises, the Commissioner may in addition to serving any notice on any one or more of the persons mentioned in clause (*ii*) serve any such notice on any architect, contractor or other person employed to carry out such work of construction, reconstruction or demolition, and also on any sub-contractor employed by such contractor or other person, or any one or more of such contractor, person and sub-contractor.

Section 381*A.*—*Permission for new well, etc.*—(1) No new well, tank, pond, cistern or fountain shall be dug or constructed without the previous permission in writing of the Commissioner.

(2) If any such work is begun or completed without such permission, the Commissioner may either—

(*a*) by written notice require the owner or other person who has done such work to fill up or demolish such work in such manner as the Commissioner shall prescribe, or

(*b*) grant written permission to retain such work, but such permission shall not exempt such owner from proceedings for contravening the provisions of sub-section (1).

Section 461.—*By-laws, for what purposes to be made.*—The corporation may from time to time make by-laws, not inconsistent with this Act, with respect to the following matters, namely :—

(*a*) regulating, in any particular not specifically provided for in this Act, the construction, maintenance and control of drains, ventilation-shafts or pipes, cess-pools, water-closets, privies, latrines, urinals, drainage-works of every description, whether belonging to the corporation or to other persons municipal water-works, private communication-pipes and public streets;

(*b*) regulating all matters and things connected with the supply and use of water.

Section 471.—*Certain offences punishable with fine.*—whoever

(*a*) contravenes any provision of any of the sections, sub-sections or clauses mentioned in the first column of the following table, or of any regulation made thereunder ; or

(*b*) fails to comply with any requisition lawfully made upon him under any of the said sections, sub-sections or clauses ;

shall be punished, for each such offence, with fine which may extend to the amount mentioned in that behalf in the third column of the said table.

Section, sub-section or clause.	Subject.	Fine which may be imposed.
		Rs.
Section 274 ..	Requisition to provide storage cisterns and other fittings to be used for connections with water works.	50
Section 377 ..	Requisition to cleanse, etc., neglected premises	50
Section 381 ..	Requisition to fill in pools, etc., which are a nuisance.	50
Section 381A, sub-section (1).	Digging or constructing well, etc., without permission.	500
Section 381 A sub-section (2).	Requisition to fill in or demolish well, etc. ..	500

Section 472.—Continuing offences.—Whoever, after having been convicted of—

(*a*) contravening any provision of any of the sections, sub-sections or clauses mentioned in the first column of the following table, or of any regulation made, thereunder, or

(*b*) failing to comply with any requisition lawfully made upon him under any of the said sections, sub-sections or clauses,

continues to contravene the said provision or to neglect to comply with the said requisition, or fails to remove or rectify any work or thing done in contravention of the said provision, as the case may be, shall be punished for each day that he continues so to offend, with fine which may extend to the amount mentioned in that behalf in the third column of the said table.

Section, sub-section or clause.	Subject.	Daily Fine which may be imposed.
		Rs.
Section 377	Regulation to cleanse, etc., neglected premises	5
Section 381	Requisition to fill in pools, etc., which are a nuisance.	50
Section 381A, sub-section (2).	Requisition to fill in or demolish well, etc. ..	50

Section 488.—Power of entry.—The Commissioner may enter into or upon any building or land, with or without assistance or workmen, in order to make any inspection or survey or to execute any work which is authorised by this Act or by any regulation or by-law framed under this Act to be made or executed, or which it is necessary for any of the purposes, or in pursuance of any of the provisions, of this Act or of any such regulation or by-law, to make or execute.

Provided that—

(*a*) except when it is in this Act otherwise expressly provided, no such entry shall be made between sunset and sunrise ;

(*b*) except when it is in this Act otherwise expressly provided, no building which is used as a human dwelling shall be so entered, unless with the consent of the occupier thereof, without giving the said occupier not less than twenty-four hours' previous written notice of the intention to make such entry, and unless for any sufficient reason it shall be deemed inexpedient to furnish such information, of the purpose thereof;

(*c*) sufficient notice shall in every instance be given, even when any premises may otherwise be entered without notice, to enable the inmates of any apartment appropriated to females to remove to some part of the premises where their privacy need not be disturbed ;

(*d*) due regard shall always be had, so far as may be compatible with the exigencies of the purpose for which the entry is made, to the social and religious usages of the occupants of the premises entered.

Section 489.—Enforcement of orders to execute works, etc.—(1) When any requisition or order is made, by written notice, by the Commissioner or by any municipal officer empowered under section 68 in this behalf, under any section, sub-section or clause of this Act mentioned in sub-section (2), a reasonable period shall be prescribed in such notice for carrying such requisition or order into effect and if, within the period so prescribed, such requisition or order or any portion of such requisition or order is not complied with, the Commissioner may take such measures or cause such work to be executed or such thing to be done as shall, in his opinion, be necessary for giving due effect to the requisition or order so made, and, unless it is otherwise in this Act expressly provided, the expenses thereof shall be paid by the person or by any one of the persons to whom such requisition or order was addressed.

(2) The sections, sub-sections and clauses of this Act referred to in sub-section (1) are the following, namely :—

274, 377, 381, 381A.

(3) The Commissioner may take any measure, execute any work or cause anything to be done under this section, whether or not the person who has failed to comply with the requisition or order is liable to punishment or has been prosecuted or sentenced to any punishment for such failure.

Section 517.—Legal proceedings.—(1) The Commissioner may—

(*a*) take, or withdraw from, proceedings against any person who is charged with—

(*i*) any offence against this Act ;

(*ii*) any offence which affects or is likely to affect any property or interest of the corporation or the due administration of this Act;

(*iii*) committing any nuisance whatsoever.

Section 518.—Power to Government to provide for performance of duties in default of any municipal authority. (1) If, upon complaint being made to him and after such inquiry as he thinks fit to make, it shall at any time appear, to the Governor in Council that any of the provisions of sections 61, 381 and 381A,.....have not been or are not being duly carried out or enforced, the Governor in Council may make an order prescribing a period within which such provision shall be carried out or enforced.

(2) Provided, that, except in any case which appears to the Governor in Council to be one of emergency, no such order shall be made until after the expiry of one month from the date of service of a written notice on the corporation, and, if the Governor in Council shall think fit, on the Commissioner, requiring cause to be shown why such order should not be made, nor until the cause, if any, so shown has been considered by the Governor in Council.

(3) If, within the period prescribed in an order made under sub-section (1) the provision is not carried out or enforced, the Governor in Council may appoint some person to carry out or enforce the same and may direct that the expense of carrying out or enforcing such provision together with such reasonable remuneration to the person carrying out or enforcing the same as the Governor in Council shall determine, and the cost of the proceedings under this section shall be paid out of the municipal fund.

APPENDIX 18.

Extracts from the Annual Report of the Public Health Commissioner with the Government of India for 1936.

(1) *The Leprosy Colony at Uzuakoli in Africa.*

During 1936-37 the colony had a total population of 1,061 inhabitants, of whom 901 were resident patients on 31st March, 1937. A few years previously the site of the colony was a dense jungle, but Dr. Brown, the first Medical Superintendent, who built up the institution, worked with enthusiasm, patience and tact and since August, 1932, when the first patients were admitted, the colony has grown into a community of lepers, who carry out among themselves all the functions of civilized life including agriculture, industry, housing, education of the children, social activities and even maintenance of law. All patients are expected to work. Every able-bodied patient receives on admission a farm and a certain quantity of seed ; at harvest time he has to return a portion to the community store. Various local agricultural products are produced. The palm oil industry is a flourishing concern, whilst other industries include weaving, carving, tailoring, net making, manufacture of musical instruments, basket making and soap manufacture. The cultivation of Hydnocarpus wightiana is also being attempted. Road making and house-building are important occupations and blacksmiths and carpenters thrive. All of the 170 children in the colony attend the school which is staffed by eight teachers, some of whom had teaching experience before they joined the colony.

As the outside population have a prejudice against buying articles made by lepers, these are sold by the patients to their fellow patients, so that internal consumption forms the main incentive for industrial activity.

Exercise for the patients is by no means neglected. For many, their occupations afford sufficient exercise in the open air ; for those who work indoors, like teachers and nurses, football, volley ball and tennis provide recreation and exercise.

The most admirable part of the community life is the excellent discipline and spirit of harmony that prevail among the inmates although about 300 villages are represented in the colony. All offences are tried by a court consisting of the Chief assisted by a council of headmen and a head woman and although all have a right of appeal to a special court conducted by the medical officer, its jurisdiction is seldom necessary.

Seventeen babies have been born in the colony to leper mothers. These infants were all separated from their mothers at birth and were admitted to a Babies house, where they were brought up on artificial foods, exception being made in the case of small and feeble infants, which were permitted to be breast-fed by the mothers, care being taken to prevent contact with the mother except at the nipple.

All patients received treatment on modern lines and during the year 17 persons were discharged as cured because of " absence of symptoms, return of pigmentation and sensation in the patches, and repeated negative bacteriological examinations. "

The whole institution is managed on an economical basis and running costs amount to the incredibly small sum of about Rs. 3-8-0 per patient per month, this including the staff comprised of a Medical Superintendent, a Toc H worker who looks after the industrial and agricultural side of the work, a

lady honorary worker, who attends to the unaffected children and the nursing staff. This is a surprisingly fine achievement and it has been rendered possible only because of the spirit of self-sacrifice that the founder brought to task he had assumed, his genius for organisation and an understanding sympathy which enabled him to win the confidence of the African and enlist his co-operation for his own betterment.

(2) *Forest Farm Colony at Mangaltarai in the Central Provinces.*

This is a co-operative undertaking, Government, the American Mennonite Mission and the Mission to Lepers all being represented on the Board of Control :—

> " Its primary purpose is to re-establish in life arrested cases of the disease who have cleared up in Mission Homes in the Central Provinces and Berar, but who need to live under healthy conditions and with some assurance of a livelihood if the risk of relapse is to be reduced to a minimum. It is also for healthy children of lepers, that they too may have opportunity of winning from the forest their own farmstead. "

An area of 6,288 acres was set aside by the Government for the purpose of providing holdings of 15 acres each and the terms of the settlement provide that, for the first two years, 20 per cent. of the persons admitted might be non-leprous people with agricultural experience in order to help the regular colonists to settle down to an agricultural life. The Government provided funds for water supply and for clearing the land, whilst the Mission to Lepers sanctioned a grant to help the colonists to tide over the first few months until the harvesting of the first crops. The American Mennonite Mission sanctioned the appointment of one of its members as the manager of the colony and he busied himself with organising the work, establishing a rural school, introducing a medical service, supervising a co-operative society and dealing with the many other problems of a pioneer venture. The development of this undertaking will be watched with interest ; its success will no doubt encourage others to make similar attempts to relieve the leprosy situation of the country.

The great importance of protecting children from infection has already been emphasised and, under existing conditions, it is almost impossible to prevent spread of infection to this susceptible group of the community. The development of leper colonies should be able to play a prominent part in this direction. In the first place, provision can be made for the segregation of infants born to leprous mothers ; secondly, life in the colony is itself an education to the resident patient in that he learns to avoid infecting others ; and, lastly, when he is discharged, he can help to spread the knowledge he has gained amongst his friends and acquaintances.

APPENDIX 19.

EXTRACT FROM THE REPORT ON LEPROSY AND ITS CONTROL IN INDIA (1941) BY A SPECIAL COMMITTEE APPOINTED BY THE CENRAL ADVISORY BOARD OF HEALTH.

Certain principles recommended by this Committee for regulating future leprosy legislation.

(1) The disease should be notifiable but notification should be confidential and confined to cases who are infective. The present legislation for the notification of leprosy is to a large extent a dead letter.

(2) Legislation should provide power to isolate infective cases which are a danger to the community. For paupers who are suffering from leprosy, however, as defined in Section 2 of the present Lepers Act, legal power should apply to all cases.

(3) A patient compulsorily isolated outside his own home should be maintained at public expense.

(4) When a pauper suffering from leprosy is removed to an asylum under legal powers the complete cost of his maintenance in the asylum should be met by the administrative authority applying the Act.

(5) Legislation should include powers for the Health Officers to examine cases who are suspected to be in an infective condition.

(6) Legal powers regarding the occupation of patients with leprosy detailed in the present Lepers Act, shall be retained but for infective cases only.

(7) The powers of arrest and removal of a person who appears to be a pauper suffering from leprosy should be entrusted to the health authorities and the services of the Police called in only when difficulty arises.

(8) Legal power should be provided whereby a person who, after committal to an asylum, absconds, can be committed to a Leper Jail by order of a magistrate. Section 12 of the Lepers Act provides for arrest without warrant and return to the asylum of persons compulsorily isolated. This is inadequate.

APPENDIX 20.

Centres where facilities for radium and deep X-ray treatments are provided.

	Province.	Whether facilities for radium treatment exist. If so, in which hospital.	Remarks.	Whether deep X-ray therapy is provided. If so, in which hospital.	Remarks.
1	Delhi ..	Yes. At Lady Hardinge Hospital.	..	No.	..
2	U. P. ..	No	It is proposed as a part of five-year plan of postwar reconstruction and development of the Medical Department in this province to establish a radium institute at the Medical College, Agra.	Yes. At the Medical College, Agra, and King George's Medical College, Lucknow.	Two more deep X-ray therapy units are proposed to be installed in the Province under postwar reconstruction scheme (Gorakhpur & Benares).
3	Bihar ..	Yes. At Patna Medical College Hospital.	..	Yes. At Patna Medical College, Hospital.	..
4	C. P. & Berar	No	It is proposed to provide radium treatment, when the New Mayo Hospital, Nagpur, is built in the five-year postwar plan.	No.	It is proposed to provide deep X-ray therapy when the New Mayo Hospital, Nagpur, is built in the five-year postwar plan.
5	Ajmer ..	No	..	No.	
6	Coorg ..	No	..	No.	
7	Madras ..	Yes. At Barnard Institute of Radiology, Government General Hospital, Madras, & King George Hospital, Vizagapatam.	..	Yes. At Barnard Institute of Radiology, Government General Hospital, Madras and Erskine Hospital, Madura.	
8	N-W.F.P.	No	Arrangements are being made to provide facilities for radium treatment in Lady Reading Hospital, Peshawar.	No	Arrangements are being made to provide deep-X-ray therapy in the Lady Reading Hospital, Peshawar.

9	Bengal ..	Yes. 1. Medical College Hospital, Calcutta (Government). 2. Presidency General Hospital, Calcutta (Government). 3. Carmichael Hospital, Belgachia, Calcutta (Private). 4. Chittaranjan Seva Sadan, Calcutta (Private).	..	Yes. 1. Medical College Hospital, Calcutta (Government). 2. Presidency General Hospital, Calcutta. 3. Campbell Hospital, Calcutta (Apparatus out of order).
10	Assam ..	Yes. At Welsh Mission Hospital, Shillong (380 mgms. of radium).	..	No.
11	Baluchistan	No	..	No.
12	Orissa ..	Yes. At Cuttack General Hospital.	..	No.
13	Bombay ..	Yes. At Tata Memorial Hospital, Parel, Bombay.	..	Yes. At 1. J. J. Group of Hospitals (Bombay Government). 2. G. T. Hospital, Bombay (Government). 3. Tata Memorial Hospital, Parel, Bombay (Private). 4. K. E. M. Hospital, Parel, Bombay (Municipal Hospital).
14	Sind ..	No	..	No .. .. ..
15	Punjab ..	Yes. At 1. Mayo and 2. Lady Willingdon Hospitals, Lahore.	..	Yes. At 1. Mayo Hospital, Lahore. 2. Victoria Jubilee Hospital, Amritsar.

APPENDIX 21.

REPORT BY COLONEL M. TAYLOR, O.B.E., M.D., D.P.H., I.M.S., ON HIS TOUR OF MENTAL HOSPITALS AT THE REQUEST OF THE HEALTH SURVEY AND DEVELOPMENT COMMITTEE.

CALCUTTA.

I commenced my tour on 30th December, 1944, in order to meet Dr. G. Bose, in Calcutta, as he intended leaving the city on 1st January, 1945, for some weeks.

In Calcutta, I visited and inspected the following :—

(1) Lumbini Park Mental Hospital and Clinic.

(2) The Mental Hospital for Male Patients at Mankundu.

(3) The Mental Hospital for Females, 78, Lower Circular Road, Calcutta.

(4) The Observation Ward, Bhawanipore.

(5) The Out-door Neuro-Psychiatric Clinic, Medical College Hospital, Calcutta.

(6) The Out-door Neuro-Psychiatric Clinic, Carmichael Medical College, Calcutta.

Lumbini Park Mental Hospital.

This institution is managed by the Indian Psycho-Analytical Society. The daily average number of in-patients treated is 20 (males 14, females 6). During the period 5th February, 1940, to 31st December, 1941, a total of 175 new mental cases attended the Outdoor Clinic.

The Outdoor Clinic at Lumbini Park Mental Hospital is also open to General Patients (8,191 was the total number attending from day to day during the period 5th February 1940—31st December 1941).

There are two Resident Physicians, the respective salaries being Rs. 100/- and Rs. 75/- per mensem, and a number of honorary visiting physicians who attend for a total of 14 hours per week. The work of the outdoor clinic and routine work can leave very little time at the disposal of the resident physicians for ward work, and the salaries paid to the Nursing Personnel would indicate that the nursing care cannot be of a very high standard.

The Senior Nurse receives a salary of Rs. 20, and the three remaining members of the Nursing Staff receive salaries at the rate of Rs. 15 per mensem, plus food and lodging. Sixteen male attendants receive salaries at Rs. 25, and five female attendants Rs. 10, plus food and lodging.

It is stated in the report from 5th February 1940 to 1st December 1941 that "for want of funds trained nurses cannot be employed to look after the patients".

The rates for indoor patients are as follows :—

	Rs.
(*i*) First Class Bed	300 p.m.
(*ii*) Second Class Bed	200 p.m.
(*iii*) Third Class Bed	150 p.m.

and "a special charge shall be made if special nursing has to be arranged for; this shall only be done with the written sanction of the guardians; the charge for the special nurse shall be paid in advance. Special medicines will also be charged for at cost price".

The rates at the European Mental Hospital, Ranchi are as follows.—

	Rs.
*(*i*) First Class (inclusive of three private attendants)	300 p.m.
*(*ii*) Second Class (inclusive of two private attendants)	200 p.m.
(*iii*) Third Class	46 p.m.

with European diet, all drugs, and no charge for extras.

* In (*i*) and (*ii*) the guardians are called upon to meet the cost of "Dearness Allowance" to the private attendants at the scale as sanctioned by Government.

It is obvious that (apart from the one free bed) Lumbini Park Mental Hospital cannot, at present, be widely patronised by the general community.

Owing to the small numbers the *per capita* rate is extremely high—*viz.*, Rs. 2,091 per annum.

It has been pointed out that the visiting physicians who are all highly qualified, spend a total of 14 hours per week in the hospital. This can scarcely be considered adequate for specialized treatment. One of the honorary physicians is a M.R.C.P.E., D.P.M., but he visits one day per week for two hours. Honorary Physicians are, as a rule, very jealous of their prerogative but take their responsibilities lightly.

The equipment is neither extensive, nor modern, and the environment of the hospital leaves much to be desired. There is little provision for diversion, occupational therapy, or rehabilitation.

The institution to all intents and purposes is a Private Home, and hampered as it is by its extensive outdoor clinic for general patients, and lack of funds, it cannot be considered a satisfactory institution for the treatment of mental patients. As at present conducted, I do not rate the facilities for training very highly. This institution, given adequate funds to meet the cost of expansion on modern lines, would, in time, become both a useful hospital, and a good teaching school.

Mankundu Mental Hospital, Calcutta.

The Male Section of this hospital is situated at Mankundu, about 22 miles from Calcutta City, and the Female Section at 78, Lower Circular Road, Calcutta.

The daily average number of patients in both sections, is 56 (males 43, females 13).

The aims of this institution according to the prospectus are:—

(*i*) To provide for up-to-date institutional treatment of mental cases, and to place the same within the reach of the masses.

(*ii*) To provide facilities for training in, and research in Psychiatry and Psychological Therapy.

(*iii*) To train up nurses for attending to mental cases.

The lack of funds has, so far, prevented these aims, and all that can be said for the institution, at present, is that even the standard of custodial care cannot yet be considered satisfactory.

In the male section at Mankundu, the buildings are good, but in a very bad state of repair, and the compound (there is no Mali) is an absolute jungle. I found the patients under poor control, and the whole atmosphere of the hospital was most depressing.

The Mental Hospital for Females.

The female section (75, Lower Circular Road, Calcutta) is located in a rented house, not very suitable for the purpose, but the patients appeared to be happier and better cared for.

I gained the impression that the Nursing Personnel in both sections was of poor quality and totally inadequate.

Here again, there is an imposing list of Visiting Physicians. Their hours of attendance are not specified, but the state of the institution, as a whole, reflects no credit on any one. It stands as an indictment to Bengal.

The Chief Medical Officer and the Secretary to the Court of Governors of this hospital, who accompanied me on my visit, are well aware of the limitations of this Institution, as is the Court of Governors. The Court has appealed to Government for financial aid, and they have offered to hand the institution over to the control of Government. If financial aid is not forthcoming the Court envisages the early closure of this hospital. The buildings and land were a gift, but, as is usual with such gifts, carry no endowment.

The Court of Governors in 1941 appointed a sub-committee to enquire into the management of this hospital. The following are some extracts from the report of the sub-committee :—

> "While paying our highest compliments to the Founder Secretary for his bold and single-handed efforts, we cannot but state that the hospital has, so far, been working with thoroughly inadequate equipment".
>
> "It seems that the authorities of the hospital had no idea of the eminence which this institution was destined to rise to in so short a time. Considering the difficulties of managing mental patients in private homes and the hardship entailed in securing accommodation in the Ranchi Hospital (Indian) where the accommodation is scarcely sufficient for Criminal Lunatics*, it is no wonder that the first non-official attempt in this line was kindly received, leniently judged, and eagerly availed of by the public. We hold, however, that the hospital should be properly equipped without further delay."

I endorse the comments of this sub-committee with regard to the Founder-Secretary, whom I had the pleasure of meeting, and I would also pay a tribute to the medical men who have attempted the impossible with the meagre resources at their disposal and the numerous handicaps with which they had to contend. The results attained, in spite of the very formidable obstacles, reflect credit on the entire staff. They have, in a small measure, assumed a responsibility which Government and the Corporation have, so far, shirked.

Fifty per cent of the patients in this hospital are non-paying, and the maintenance charges for paying patients are mush less than at Lumbini Park.

The attending physicians receive travelling allowance only, while the remuneration of the nursing staff and attendants is rather less than is normally paid to menials.

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* The statement in this report, that the accommodation in the Indian Mental Hospital, Ranchi, is scarcely sufficient for criminal lunatics, is incorrect. The total authorised accommodation is for 1,300 patients, and the number of criminal patients at present under treatment is 421 (males 392, females 29).

Until adequate funds are available for vast improvements in the buildings, adequate whole-time qualified personnel, and modern equipment this institution is neither in a position to render modern treatment in the psychoses, nor to afford any facilities for teaching in Psychiatry.

Mental Observation Ward, Bhawanipore, Calcutta.

This institution receives Magistrates' cases, and patients for observation sent by the police authorities.

The Superintendent is the professor of Medical Jurisprudence in the University, and, *as a side-line*, he is Lecturer in Mental Diseases. The Buildings are first class, in very good order (rather over-done with massive iron bars), and located in a central area of the city. There are 30 beds, and the daily average number of patients is 10.

It is here that the under-graduates receive their instruction in the psychiatry (ten lecture demonstrations), and to augment the clinical material, twelve patients are transported from the Indian Mental Hospital, Ranchi. The patients so transported are classified into three groups :—

Group I. Idiocy (1), Imbecility (1), Obsessional Neurosis (1), G.P.I. (1).

Group II. Mania (2), Melancholia (1), Dementia Paranoides (1).

Group III. Dementia Praecox (Schizophrenia) (1), Paranoia (1) Confusional Insanity (1), Drug Psychosis(1).

The training of the Calcutta Undergraduates in this most important branch of medicine is totally inadequate. The students are merely being exploited. The first essential step would be to divorce Psychiatry from Medical jurisprudence and appoint a Psychiatrist as Lecturer, and the Second, and more important, the provision of suitable clinical material.

I am of the opinion that this institution could be modernised at a small cost and could more efficiently contribute to psychiatric education. I suggested to the Surgeon-General that it would make an admirable Psychiatric Unit, with out-patient department and beds. The Observation Ward would also be possible in the same Unit. The Surgeon-General agreed.

The Psychological Clinic, Carmichael Medical College, Calcutta.

This clinic is open from 8 a.m. to 10 a.m. on Tuesdays and Thursdays —Outdoor patients only.

Dr. G. Bose is in charge of the Clinic and is assisted by Dr. Nagendranath De, M.B., D.T.M. (Cal.), M.R.C.P.E., D.P.M. (Lond.), and Dr. S. Banerjee, B.Sc., M.B. (Cal.), D.P.H. (Lond.).

During 1943, 57 new cases from Calcutta and 17 from the moffussil received treatment at this clinic, and 17 old cases from Calcutta and 5 from the moffussil also attended. The total number of patients receiving treatment during 1943, was 96, the average daily attendance was 4 (1 new, 3 old cases), and included Psychoneurotics and Psychotics.

The total expenditure for the year amounted to Rs. 42-2-0.

Clinical lectures and demonstrations were held regularly for senior students of the Carmichael Medical College, and Post-Graduate students of the Department of Psychiatry, University of Calcutta.

Clinic for Neurology and Psychiatry, Mental College Hospital, Calcutta.

PHYSICIAN IN CHARGE—Dr. Chandra Saha, M.Sc., M.B., D.T.M. (Cal.), F.R.F.P.S. (Glas.), M.R.C.P. (Lond.).

This clinic opened in July 1937, closed in December 1941, re-opened in July 1943, closed again 1943, and again re-opened in March 1944.

As will be seen, this Neuro-Psychiatric clinic has had a chequered career, and in his report of 1942, the Pyhsician-in-charge states "for want of beds and rooms, special methods of treatment and investigation cannot be undertaken".

When this clinic did function, the daily average number of patients was, new cases 1·8, old cases 4, in the proportion of two Psychiatric to one Neurological case.

The Physician-in-charge rightly states that the clinic is still in its embryonic stage, and he has a scheme for further development.

The Principal of the College is against Neuro-Psychiatric Clinics, and considers there should be separate Neurological and Psychiatric Clinics. The consensus of present day opinion is in favour of the Principal's views.

Both clinics are poorly equipped, and conducted entirely by Honorary Physicians, a subject which I shall deal with later.

While in Calcutta I took the opportunity of calling on the Surgeon-General with the Government of Bengal, the Secretary, Public Health and Local Self-Government, Government of Bengal, and the Registrar, Calcutta University. I also made contact with many other gentlemen, including the Professor of Physiology, Medical College, but space is too short to give details of all discussions. They will be embodied in my General Remarks.

I left Calcutta, having formed the opinion that the mental hospitals and clinics which I visited there cannot be considered satisfactory, and are far below the standard which one would expect to find in a University City.

There is a crying need for a modern Mental Hospital for Indians in Calcutta of at least 250 beds—both in the interests of the community and the university. The bulk of the clinical material passes to the Indian Mental Hospital, Ranchi, and it is not feasible either to send large number of patients from Ranchi to Calcutta, or to send Medical Students to Ranchi.

The question of expanding and modernizing the existing Mental Hospitals in Calcutta would be a matter for the Bengal Government; it is advisable that institutions where a teaching programme is carried out should come entirely under Government control and supervision.

It would be more economical, and would lead to greater efficiency, to build in Calcutta a modern Mental Hospital of 250 beds on a suitable site, with a view to possible later expansion to 1,000 beds.

A need which is equally urgent is a Home for Mental Defectives of at least 200 beds.

If the climate in Lahore, Bombay, Agra, Nagpur, Madras, is not considered a bar to the erection of Mental Hospitals, then the project is feasible in Calcutta, and should be seriously considered before further expansion programmes are undertaken at Ranchi.

MADRAS

In Madras, my programme included visits to the following:

(1) The Government Mental Hospital.
(2) General Hospital, Madras.
(3) The Madras University.
(4) The Madras Medical College.
(5) The Stanley Medical College.
(6) Nursery Schools and Montessori Schools.
(7) The Children's Aid Society.

The Government Mental Hospital

The hospital is built over a large area (approximately 60 acres), and there is ample ground space and playing fields. The buildings are good and are kept in a good state of repair.

The daily average number of patients during 1943 was 1,223 (males 861, females 362). There are no criminal patients.

The hospital is grossly overcrowded, and only a small percentage of the patients have cots. Some of the best wards are at present requisitioned for R.P. work.

In spite of this, the custodial care is of a reasonably good standard (by the term "Custodial Care" I mean the orderly and systematic methods by which physical, recreational, and hygienic activities are regularly carried on).

The Medical Superintendent holds the degree of M.B.B.S. (Madras), and has been on the staff of the hospital for 14 years; the members of the medical staff are temporary, and belong to the General Service cadre, and are not highly qualified.

The Deputy Superintendent who had been on the staff for 2-8/12 years informed me that he was working in the Mental Hospital merely "because he had been posted there", and he sounded as if he had a grievance.

Of the 7 Medical Officers one holds the M.R.C.S., L.R.C.P., and L.M.S.S.A. (Lond.), and six are L.M.Ps. There are two women apothecaries. The Medical Superintendent says he is handicapped by continual changes in the Medical Staff. The Deputy Superintendent with 2-8/12 years service holds the longest record of service of the present staff.

The Medical Superintendent has had no Post-Graduate courses of instruction, and the standard of Psycho-therapy can well be imagined. The Medical Staff is barely sufficient to give proper medical and surgical care to all the patients who develop acute or chronic physical disease during the course of their Psychoses. The ratio per cent discharged recovered to daily average strength is 10·79, and the ratio per cent of cases recovered to direct admissions is only 12.20. These figures indicate that detention rather than therapy is the main function of this institution.

The Medical Superintendent is responsible for the training of Under-Graduates from the Madras, Stanley and Missionary Medical Colleges. There are four courses (12 lectures and demonstrations) per annum; the average number of students attending each course being 35. The number of students receiving instruction is therefore 140 per annum.

I am of the opinion that this responsibility is too heavy for the present Superintendent, who has had no clinical or Post-Graduate experience outside the Madras Mental Hospital. I understand the Madras Government proposes to press for the release of the permanent Superintendent who is at present serving as a Psychiatrist in the Army, and I consider that this is an urgent necessity.

There are no Outdoor Psychiatric Clinics at any of the Madras Hospitals, and this is well, for there are no officers with the qualifications and experience to conduct such clinics.

There are at present no facilities in Madras for Post-Graduate training in Psychiatry. I shall return to this subject in my General Remarks. Let me, however, quote Lt.-Col. G. R. McRobert, I.M.S., Professor of Medicine, Madras, one of the ablest men in the Medical profession in India today, in an address he delivered recently before the Council of Post-Graduate Medical Education of the University of Madras :—

"For diseases of Mind we have not in the whole Madras Presidency, with its teeming millions, and vast amount of mental disorder and Psychoneuroses, a single Mental Expert, technically qualified to teach even up to the pass M.B. standard, far less to instruct Specialists."

The Social Services which I was invited to visit in Madras are still in the pioneering stage. They included the Children's Aid Society, Egmore; the Madras Vigilance Association, Mylapore; the Nursery School Projects (Vepery Nursery School), and one of the Montessori Schools. They are, no doubt, being conducted conscientiously by persons who are trying to do the job to the best of their ability, but they lack that Psychiatric background which makes for efficiency. There will be no co-ordination in these Social Services until Madras has an organized Mental Health Service. Efficiency is not possible until an adequate number of trained Psychiatrists and Psychologists is available.

I do not believe that Psychiatry is the answer to all problems in life, but there is no doubt that a Psychiatric approach to the understanding of human behaviour should be made to an increasing extent by all workers in the fields of Physiological, Social, and Psychological maladaptation.

BANGALORE

My programme here included visits to the

(1) Government Mental Hospital,

(2) Government Medical Schools,

(3) Government General Hospitals,

and I had interviews with the Senior Surgeon (the Administrative Medical Officer, Mysore Government), the Residency Surgeon, and some of the Teaching Staff at the General Hospitals.

Mysore Government Mental Hospital

After the depressing experience at the Mental Hospitals in Calcutta and Madras, it was a real pleasure to visit the Bangalore Mental Hospital. The Hospital is comparatively new (1937), and has been planned on the Villa system, the latest design for Mental Hospitals. The spacious lawns and gardens are well kept.

Accommodation is available for 300 patients (males 200, females 100). The pavilions for male and female patients are self-contained, and arranged in a square quadrangle, with units of 4 to 20 patients. There are single rooms (rather small) in each pavilion, which are intended for boisterous patients.

Special rooms are provided for paying patients, and some Cottages are available for well-to-do patients.

All the essentials for modern treatment are present in this hospital—modern Hydrotherapeutic Units, a well-equipped Operation Theatre, a Psychological Laboratory, conducted by a full-time qualified Psychologist, a useful Occupational Therapy Department, a Club and Diversional Therapy Units, excellent Surgical and Laboratory Equipment, and extensive Fruit and Vegetable Garden, where patients so inclined can occupy themselves.

Electrical Convulsant Therapy apparatus and an Encephalography Unit will be installed as soon as they are available on the market.

The Hospital is supervised by two Boards of Visitors, one, composed of State Officials, deals with the interests of Mysore State patients, the second, composed of Magistrates, Medical Officers of important hospitals, and a few non-officials, looks after the interests of Civil Patients (non-Mysore) and patients from the Military Area.

The Hospital receives paying patients from any part of India, provided there is a reasonable expectation of recovery.

Patients are to a large extent selected, and, in the circumstances, the recovery rate to direct admissions exceeds 40 per cent. This high recovery rate is the best indication of the standard of treatment.

The types of patients undergoing treatment in this hospital include the Schizophrenic—Paranoid Group, the Affective Group, the Organic Reaction Group, the Psycho-Neurotic Group, Epilepsy, Pre-senile, Senile and Arterio-Sclerotic Dementias, and Mental Deficiency.

The clinical material is ample, both for under-graduate and post-graduate teaching.

The hospital also conducts a daily Out-Patient Department, where Psycho-Neurotics and patients who do not require hospitalization, and those who have been discharged but need continuation of treatment are attended.

In addition to the above class of patients, many cases are referred to this clinic for opinion where a Psychological basis for physical symptoms is suspected. Problem Children, Delinquents, Dull and Backward Children of various grades and types, and children suffering from speech defects, etc., are also treated. The number of out-patients (new and old) attending the Out-Door Clinic during 1943, was 5,242, and during the same period 705 adults and 162 children were examined in the Psychological Laboratory. The Psychologist hopes for additional equipment in the near future, and plans for the extension of buildings are already in hand. The extension will include a Research Laboratory and a Neurological Laboratory.

The Case Records are admirably maintained, and clinical assistants and students have an excellent opportunity of a detailed study of cases placed at their disposal.

The Hospital is recognized as a teaching institution for the M.B.B.S. and B.A. (Hons.) in Psychology of the Mysore University, and the L.M.P. course of the Medical School. The hospital is also recognized as a School for post-graduate work and some research work is already being undertaken.

The staff as a whole gives the impression of high standard of efficiency.

This hospital, as at present conducted, is well adapted for both undergradate and post-graduate teaching, but a caution is necessary. The Medical Superintendent is a highly trained and experienced teacher and clinician, but there is no Deputy Superintendent and under-study. The Superintendent is on a ten years contract which is completed in March 1945. It is doubtful if he will remain in the service of the Mysore Government, and the scale of pay is so inadequate that it will never command the services of a man of comparable ability to the present Superintendent. In short, the Bangalore Mental Hospital is a "one man show" ran by Dr. Govindaswamy. If Dr. Govindaswamy leaves Bangalore, the Mental Hospital will deteriorate, and the teaching facilities will disappear.

There is an adequate staff, on a poor scale of pay. My remarks on Nursing Personnel apply equally to this Institution as to all the others visited.

I would offer the following criticism on the layout of the Bangalore Mental Hospital. The residential quarters are much too near the hospital wards. The residence of the Medical Superintendent is less than a stone's throw from the residence of some of his subordinates. Bangalore Mental Hospital might well be accepted as a model, but these defects should be avoided in the erection of new Hospitals.

POONA.

At Poona, I visited the Central Mental Hospital, and the Medical School Hospital, and had interviews with Lt.-Col. B. Z. Shah, I.M.S. (Retd.), Medical Superintendent of the Mental Hospital, and Lt.-Col. S. Prall, I.M.S., Civil Surgeon and Superintendent of the Medical School Hospital.

Central Mental Hospital, Poona.

This institution is situated at Yeravda, about 7 miles from Poona City, and is conveniently within reach of the students of the Medical School. I understand the Poona Medical School will be up-graded to the status of a College in the near future.

The authorized accommodation is as follows:—

	Male	Female	Total
Europeans	141	74	215
Indian Section No. 1	124	127	251
Indian Section No. 2	456	178	634
Acute Section	34	11	45
Infirmary	79	53	132
Total ..	784	443	1,227

The daily average number of patients during 1943 was 1,326—almost 100 more than the authorised scale, and since the authorized scale, according to floor space is none too generous, this hospital can, at present, be described as over-crowded.

During 1943 there were only 21 Voluntary patients.

Occupational Therapy has been restricted owing to the difficulty in procuring raw materials, and Diversion Therapy for all patients has not been possible owing to lack of funds.

The total annual expenditure (1943) was Rs. 4,90,927; the amount received from paying patients was Rs. 1,47,627, so that the total cost falling on Government amounted to Rs. 3,43,300.

The annual total *per capita* cost in 1943 was Rs. 368·28, and it can therefore be assumed that in normal times the *per capita* cost was much less than one Rupee per day.

Staff.—The Superintendent, due to the present emergency, is a retired I. M. S. officer who does not profess to be a Psychiatrist, and the remaining members of the professional staff lack experience in Psychiatry.

In 1942 the ratio per cent. of patients discharged recovered to direct admissions was 15·89. This is a very satisfactory figure considering that the hospital has insufficient medical staff to give more than cursory attention to patients.

This institution could be converted into a first class Mental Hospital with very little expenditure. The buildings are good, well kept, and suitable. Some of the massive iron bars might well be removed.

The equipment in all departments is poor, but this can quite easily be remedied as funds become available. The outstanding deficiencies in this hospital are the lack of trained Psychiatrists, and trained nurses, and the Bombay Government will have to work on the theory that more and better trained professional personnel is the urgent need of the Central Mental Hospital at Poona.

Eight lectures, with demonstrations, are given to the students of the B. J. Medical School, Poona, by the Medical Superintendent, and, with the present staff, this hospital is quite unable to extend its teaching burden to include either M. B. students or Post-Graduate.

There is no Psychiatric Clinic at the B. J. Medical School Hospital, and at present there is no scheme to include one in the near future.

BOMBAY.

My programme in Bombay included interviews with the Surgeon-General, the Registrar of the University, the Dean of the Medical Faculty of the University, the Dean of Seth G. S. Medical College, the Principal of the Grant Medical College, the Hon. Psychiatrists, Grant Medical College, and the Hon. Lecturer in Psychiatry, G. S. Medical College, and others.

I visited the Psychiatric Clinic, J. J. Group of Hospitals, the N. M. Mental Hospital, Thana, the Indian Institute of Psychiatry and Mental Hygiene, and the Child Guidance Clinic, Sir D. J. Tata School of Social Work.

Thana Mental Hospital.

This institution is situated about 20—25 miles from Bombay. Although not very old (1901) it cannot be described as a Modern Mental Hospital. Its present function is obviously one of segregation rather than of active therapy.

The daily average number of patients during 1944 was 500·2—a number considerably in excess of the authorised scale.

The ratio per cent. of patients discharged recovered to direct admissions during 1944 was 20, a figure which reflects credit on the Superintendent and his staff.

The number of Voluntary patients in 1944 was 40, and the daily average number of criminal patients for the same period was 32·5.

There is, I understand, a scheme for improving the present hospital, or alternatively to erect a new Mental Hospital. The latter alternative seems the better, but with a programme for a Post-Graduate course in Psychiatry and a large number of Undergraduates in Medicine, it would be worth while considering the erection of a modern Mental Hospital on the same lines as the Mental Hospital, Bangalore, of about 250—300 beds, and on a site accessible to both teachers and students. Almost a whole forenoon or afternoon is expended in travelling to and from this institution by those attending demonstrations.

The Out-Patient Psychiatric Clinic—J. J. Group of Hospitals, is under the direction of Dr. Masani, the Hon. Psychiatrist, who holds a D.P.M. There are 4 beds allotted for in-patients, and the average number of patients said to attend the Outdoor Clinic, is 12. The clinic functions twice weekly, and the Physician's sessions extend from 2 to 3 hours. The clinic is poorly equipped, and the House Physician (who is shared by the T. B. Clinic), is studying for his M. D. degree in Midwifery and Gynaecology.

Students for the M. B. degree attend this clinic for 7 or 8 sessions; they have 14 lecture demonstrations at the Grant Medical College, and five demonstrations at the Thana Mental Hospital. The Hon. Physician's suggestions to increase the lectures to 50 will, no doubt, be strongly opposed, in view of the already over-loaded curriculum.

Seth G. S. Medical College.

There is no regular out-door Psychiatric Clinic and no beds allotted for Psychiatric cases. The Hon. Lecturer in Psychiatry visits when called upon. He is M.B. B.S. (Bombay), and did an extensive post-graduate course (18 months) in the U.S.A. His visits average two per week, and the number of patients seen average two per week.

Diploma in Psychological Medicine. I have studied very carefully the Syllabus for the Diploma of Psychological Medicine of the Bombay University, and I have had lengthy discussions on it with the Surgeon-General, Bombay, the University authorities, and the two Physicians on whom will fall the burden of teaching in Psychology and Psychiatry.

I did not discuss the teaching of Anatomy and Physiology of the Central Nervous System. There is no Psychological Department in the University, and the two Hon. Physician-Lecturers will have no Psychological Laboratory at their disposal. The out-door Psychiatric Clinics are poorly-equipped for teaching purposes, while the Mental Hospital at Thana cannot be described as of a very high standard.

The Bombay Diploma in Psychological Medicine requires no training in Experimental and Practical Psychology, but I cannot see how Psychology can be taught in a scientific manner without a Psychological Laboratory, and a well-equipped Psychological Department.

Psychiatry cannot be learned from books and didactic lectures. It must come as the result of actual contact with patients. Theories may be discussed in the Class Room, but when we attempt to fit them to conditions as they are, something is missing, and that something is skill and understanding which can only be acquired through the medium of clinical experience.

I am definitely of the opinion that teachers in Psychological Medicine must have long experience of full time clinical work in Mental Hospitals. This is particularly important in Post-Graduate instruction.

I have discussed this question in some detail. I would remind the Committee that I am discussing Principles and not individuals, and with the present facilities for teaching I cannot be convinced that the standard of the Diploma in Psychological Medicine, Bombay, will be very high, and I believe most of the authorities I have interviewed take this logical view also.

I do not suggest that the scheme be dropped. On the contrary, a beginning must be made sometime, but the authorities must press on schemes which will ensure better facilities for training.

The Superintendent, Thana Mental Hospital, has shown me Plans for a new Mental Hospital, and has given me a note embodying his suggestions for improvements. The document is too lengthy and in too great detail for inclusion in this report, but I have suggested that it be forwarded to the proper authorities for careful consideration.

It would be more convenient for teachers and students if a site for a modern Mental Hospital could be found nearer the Medical Schools.

The Travelling Allowances granted to the Honorary Physicians permit them to visit the Thana Mental Hospital once per week—occasionally twice. It takes approximately 2½ to 3 hours in travelling, and therefore the time at their disposal for Psychotherapy and Clinical Study can be but limited. Teaching at Thana Mental Hospital should obviously be the entire responsibility of the Superintendent of the Mental Hospital.

Social Services in Bombay.

A creditable start has been made, and I was greatly impressed by the work of the Child Guidance Clinic of the Sir Dorabji Tata Institute of Social Sciences. The number of children dealt with is small. During 1939, the number of new cases admitted was 63, and 11 old cases remained from 1938. In spite of these small numbers, this institution will be of great help in the training of both undergraduates and post-graduates in the study of Problem Children, and Child Psychology.

In the latest published report (1939) it was claimed that " the results of the work were gratifying, taking into account the extreme infancy of the Clinic, and the shortage of trained Staff ". This has been the usual experience of most Clinics. Further development of this Child Guidance Clinic will bring forth well-trained Psychiatric Social Workers, who will be capable of treating the family members, while the Psychiatrist works with the patient.

NAGPUR.

I visited the Nagpur Mental Hospital, the Mayo Hospital and had discussions with the Inspector-General of Civil Hospitals, the Superintendent, Medical School, and the Superintendent of the Mental Hospital.

The Nagpur (Central Provinces and Berar) Mental Hospital.

The Medical Superintendent (Dr. J. Roy, M.B., D.P.M.) handed me a note with " Certain suggestions regarding the Post-War Reorganization Scheme about medical relief and health development ". These are of interest and I shall enumerate some of them briefly. He says :—

(1) " It is not known definitely whether the Medical Relief Advisory Committee of the Health Survey and Development Committee will advise

the Central Government to consider " Health Problems and its Development " as an All-India problem or whether the Government of India will decide to leave these problems for the consideration of Provincial Governments for necessary action. If it is the latter, then it must be admitted that there will be no uniformity in the execution of the scheme, as some of the Provinces may not be in a position to give effect even to the most urgent needs on account of their financial position."

I agree entirely.

(2) He recommends the creation of a Mental Health Service as in the United Kingdom or United States, America, and advises :—

(*a*) Compulsory Primary Education of the right type.

(*b*) Creation of a Mental Health Service consisting of Psychiatrists Psychologists and trained Social Workers.

(*c*) Systematic psychometric investigation of all school-going children and necessary gradation as regards their capability to pursue different vocations. This implies specially trained vocational and industrial Psychologists.

(*d*) Creation of separate and independent chairs in Psychiatry and Psychology in all the Universities. There must be under-graduate and post-graduate courses.

(*e*) Psychology and Principles of Psychological Medicine must be included in the curricula of Medical Education.

(*f*) Children's Clinics must be as wide-spread as possible.

He also strongly advocates that " the Health Problem (both Mental and Physical) be treated and dealt with as a Central Subject by the Central Government to ensure uniformity, as otherwise, it is just possible that some of the Provincial Governments may find it beyond their financial resources to give full effect to the scheme for which grant of a subvention might become necessary.

It is not possible to enumerate all of Dr. Roy's observations. The above would be the ideal, and in due course will be practicable, but it is more than a quarter of a century since the United States of America and United Kingdom, took up Mental Health problems, and since the subject, has, so far been shirked in India, we cannot expect the ideal scheme to materialise for some considerable time.

The Mental Hospital has accommodation for 600 patients (beds do not yet exist for all patients, and in the Isolation Block they are of cement)— Males 458, Females 142. There is no other Mental Hospital in the Central Provinces. The 1931 Census revealed the Insane Population of the Central Provinces to be 5,033 (Males 3,161, Females 1,872). There would appear to be a clear case for increasing the accommodation.

The hospital is of a very poor type, and some of the buildings date from the first half of the Nineteenth Century. The ratio per cent. of patients discharged recovered direct admissions during 1944 was 21·15. In view of the numerous handicaps, this figure is very creditable.

The following is the list of defects, as prepared by the Medical Superintendent :—

(*i*) Inadequacy of the Medical Staff.

(*ii*) Inadequacy of the Nursing Staff.

(*iii*) Very poor quality of the Attendant Staff.

(*iv*) No Neuro-Surgeon, no Biochemist, no Pathologist. (Laboratory buildings have been completed, but the scale of pay is not likely to attract a good Bio-Chemist).

(*v*) Some of the buildings are of the archaic type.

(*vi*) There are no Occupational Therapists nor Physical Culturists.

(*vii*) Inadquacy of menial establishment.

(*viii*) Very low scale of pay for all Staff (Medical, Nursing, Attendants).

(*ix*) Mental Defectives have to be admitted along with the Psychotic in the same hospital, as a result of the definition " Lunatic " [Section 3 (4) of the Indian Lunacy Act, 1912].

I do not think the Superintendent has been ungenerous. I might add that, in my opinion, it is the poorest type of Mental Hospital, I have visited in India, which has Government support. In his observations the Medical Superintendent states : " From time to time the unsatisfactory state of affairs had been brought to notice of the Government, and a six-year planned scheme was submitted in 1938, to which effect is being given, as far as war conditions will permit." He concludes with the following : " I made it clear at that time that my recommendations were only the first stage towards making this hospital a hospital for Mental Diseases in fact as well as in name".

Students for the L. M. P. Diploma receive five lectures, which is included as a branch of Medical Jurisprudence, but there is an advance on Bengal—the Medical Superintendent of the Mental Hospital is the Lecturer.

There is a proposal under consideration to include a short course in Psychology in the curriculum of the Medical School Students, Nagpur. This is a step in the right direction.

There are no facilities for Post-Graduate study in Nagpur, and there are, so far, no Psychiatric units in the General Hospitals.

My General Remarks apply to Nagpur.

It appears to me to be a mistake to go on with piece-meal expenditure on a Mental Hospital, which for all practical purposes is obsolete. The present Mental Hospital, with certain improvements, might well be converted into a home for Senile and Chronic cases, but for the treatment of the Psychoses and Psycho-neuroses, and a teaching programme, a new Mental Hospital of 500 beds (sited with a view to ultimate extension to 1,000 beds) should be the immediate target.

AGRA.

At Agra I had lengthy discussions with Major-General Buckley, Principal of the Agra Medical College, some of the Professorial Staff of the Medical College, and Dr. Lal, Superintendent of the Mental Hospital.

Mental Hospital.

The accommodation in this hospital is for 600 patients, and the daily average number under treatment during 1944 was 517·32.

There are no Voluntary patients and no Criminal patients.

This hospital stands in need of many improvements. The Superintendent is enthusiastic, and is doing his utmost to make progress. He is M.B., B.S., and had a short course of training at the European Mental Hospital, Ranchi, before he took over charge of the hospital about two years ago, and he hopes that the United Provinces Government will grant him facilities to proceed to the United Kingdom to obtain the Diploma in Psychological Medicine at an early date.

I propose to make some quotations from his answers to my Questionnaire. He states :—

(1) "There are no nursing arrangements of any sort. Even patients with Enteric, Pneumonia and other debilitating diseases get no nursing. They are at the mercy of so-called attendants, popular idea being that they are just like Warders of Jails. They hesitate to touch patients when unclean, not to mention giving them bedpans or urinals, or cleaning them when necessary. They look to the sweepers to do all this for the patients. It is difficult to undertake any specialised treatment without team work, the main constituents of which should be efficient nursing and medical care. For special treatment like Cardiazol shock, Continuous Narcosis, Pyretotherapy, and Hydrotherapy, careful watching and tending is necessary during and after treatment. To carry on this job it is necessary that trained nurses should be appointed in the Male Section and trained female nurses should be appointed in the Female Section....."

"In my opinion due to the above difficulties it is necessary that nurses be appointed for the Mental Hospital before any real attempt to give modern specialised treatment can be seriously undertaken. Nine male nurses for the Male Section of this hospital, and six female nurses for the Female Section should be appointed in the first instance."

"Hydrotherapy—In this hospital there is only one Hydrotherapy Tub in the Male Section and one in the Female Section. The result is that not more than one patient can be treated in each Section. For this treatment to be effective it is necessary that the patients should be in the bath for 6—10 hours.....I think there should be at least nine tubs before the bare needs could be met with."

The Superintendent has constructive proposals for Occupational Therapy, Recreational Therapy, etc., and he has hopes that they will receive sympathetic consideration in the near future.

The Superintendent goes on to state :—

"Increase in the number of attendants is absolutely necessary in order to reduce restraint to a minimum. The other Mental Hospitals spend double the sum that is spent in this hospital per patient on supervision. Unless the number of attendants is doubled, the restraint abolished, outbursts of violence and destructive tendencies of the patients cannot be stopped, and unless the patients have a feeling of freedom, the progress of mental deterioration in the mentally sick cannot be effectively checked."

"*Staff*—There are only two Medical Officers in the Male Section with a population of about 400 patients—at least two more Medical Officers are required to carry out special treatment, and look after the patients effectively—one should be Psychologist. One additional Medical Officer for the Female Section is an absolute necessity."

"*Diet*—The diet of Class III patients is very poor as compared with other hospitals. They have hardly any changes. The same menu of dal roti in the morning, and roti sag in the evening goes on, day in and day out, and one can imagine the monotony of the meals and the patient's feelings and reactions. Other Mental Hospitals spend about double the sum per patient that is spent here on diet. Better diet, with occasional changes, will improve the physical health, and the mental health, too, will certainly improve."

The Medical Superintendent has submitted the diet schedule of the Indian Mental Hospital, Ranchi, and has invited the attention of the authorities to the marked difference. He has also submitted scheme for improvement in the kitchens.

He has also suggested that an apparatus for electrical convulsant therapy be installed.

I need hardly say that I endorse the condemnations enumerated by the Medical Superintendent, and I am of the opinion that they are worthy of consideration from the Medico-Legal as well as the humane point of view.

It might be mentioned that in this hospital a very large number of the patients have been suffering from anklyostomiasis. This difficult problem is being tackled by the staff, but it is still prevalent to an alarming extent. I think further comment on this institution is superfluous.

A course of 18 lectures is given to the M. B. students of the Agra Medical College, the Lucknow Medical College, and the Lady Hardinge Medical College, Delhi, and three lectures in normal Psychology are given to 2nd year students of the Agra Medical College.

Post-Graduate teaching is not contemplated at this school, and in my opinion, the burden of teaching M. B. students is too heavy, and cannot be carried out efficiently by the present Superintendent until he has taken the D.P.M. course himself.

The Superintendent, however, has very progressive views, and has the makings of a first class Superintendent and Clinical teacher. He deserves every encouragement. and he should be given every facility to carry out his study programme.

LAHORE:

At Lahore I visited the Punjab Mental Hospital, and had lengthy interviews with the Inspector-General of Civil Hospitals, and a Conference was also arranged by the Inspector-General of Civil Hospitals, which was attended by the Principal, K. E. Medical College, Lahore, the Principal, Balak Ram Medical College, Lahore, the Principal, Glancy Medical College, Amritsar, the Principal, Arya Medical School, Ludhiana, the Registrar, Punjab University, and the Secretary, Punjab State Medical Faculty.

Punjab Mental Hospital.

This hospital has an authorised accommodation for 1,300 patients, and the daily average number under treatment during 1943 was 1,226·14.

The present Medical Superintendent is a retired P. C. M. S. Officer, and holds the degree of M.B.B.S. Before appointment to this onerous post (the Punjab Mental Hospital is one of the largest in India) he had no experience whatsoever of Mental Hospitals or Psychiatry.

I propose to quote from a statement prepared by the Superintendent in answer to my Questionnaire.

(1) "The Medical Staff is most inadequate. This becomes very evident when one compares it with the Staff of the Mayo Hospital, *e.g.*, for 85* beds for sane, responsive and co-operating patients in a section of the Mayo Hospital there are, one Physician, one Clinical Assistant, and three House Surgeons, besides fully qualified nurses, etc. This staff is purely for the treatment of the cases, and have nothing to do with administrative, or Laboratory work, etc. In the Mental Hospital there are 1,225 patients with only one Medical Superintendent, one Deputy Superintendent, and one Assistant Superintendent, on general duty, recently engaged, one Lady Doctor, two Sub-Assistant Surgeons, and two part-time House Surgeons who work for a couple of hours only. The patients are resistive, mute, unresponsive, unclean and filthy in their habits, and some have to be tube-fed. They have to be looked after, treated for physical ailments and mental troubles.....
.....A thousand and one other administrative duties are to be carried out by this meagre staff. They (the Medical Staff) fail or are rather forced into the habit of neglecting duties and then become callous, and finally their emotional apathy becomes level with that of a Schizophrenic. It will take a doctor 20 hours to devote one minute to a lot of 1,200 patients."

The Superintendent goes on to say—

"If any of our patients suffers from a physical ailment which we cannot properly diagnose for lack of facilities or lack of specialized knowledge, we send such cases to the Mayo Hospital. Generally there is great difficulty, I do not say reluctance, for, as a rule, a bed is not available."

The Superintendent further points out that although the Asylum has been converted into a so-called hospital, the "contents of a bottle cannot be altered by changing the label." He says: "the same bars, the same rotten cells, the same counterparts of Jail Warders as Attendants remain. The trained nurse, the sympathetic Warders, the specially qualified doctor, are all conspicuous by their absence. There are no special facilities or apparatus for newly discovered forms of mental treatment." He points out that the hospital is a detention camp for criminal cases, and an asylum for demented non-criminal cases. He suggests that a Visiting Surgeon and Physician be appointed from the Mayo Hospital, but even with this arrangement, he considers that the Staff should at least be doubled.

There are no outdoor Psychiatric Clinics connected with General Hospitals in Lahore, and I agree with the Superintendent when he says that it will be several years before such Clinics can enter the realm of practical politics. He rightly states that "the training received by our Medical men in Psychiatry is very scanty, and they are likely to make a muddle of it if they are encouraged to meddle in this line."

There are three new Wards with accommodation for 300 patients in this hospital (completed in 1937), and they are of a good type. The accommodation for the remaining 1,000 patients can only be described as deplorable. There is almost a 100 per cent. infestation of *Ascaris Lumbricoides* in the hospital population. An entirely new hospital built on modern lines is an urgent necessity.

The Medical Superintendent admits his limitations. He has no knowledge of Mental Diseases, and his own statements reveal how such a situation reacts on a subordinate staff. He is most unhappy in the appointment, and is merely there from a sense of duty in the present emergency. I am of the opinion that the most urgent requirement in this hospital is the appointment of a qualified Medical Superintendent.

The Medical Superintendent is responsible for the training of 90 M.B. B.S., and 60 L.S.M.F. students per annum. He sums up the situation himself when he states that the " training received is very scanty ".

There are at present no facilities in Lahore for Postgraduate teaching in Psychological Medicine, and none is contemplated in the near future.

My limited Survey of the conditions in the Punjab Mental Hospital convinces me that in this institution adequate understanding of Mental Disorders, and adequate Therapy are both wanting. The problem is very complex but urgent.

After my visit to the Punjab Mental Hospital I read in the daily paper that the Provincial Government had a scheme for relieving the congestion and overcrowding in Punjab Jails by opening more jails under their first five-year plan. Provision is to be made for 30,000 prisoners, and in place of the old fashioned jail buildings, modern structures have been planned which will have flush latrines, etc.

These jails will have organized Occupational Therapy Schemes, and expansion of the present Jail libraries and education staff.

The Punjab Mental Hospital is worse than many of the Central Jails I have visited in India. The Government of the Punjab will no doubt exercise, in some measure, the same solicitude for unfortunate patients whose only crime is that they suffer from Mental Diseases, which, in the majority of cases, can be cured or relieved.

RANCHI.

Indian Mental Hospital, Ranchi.

Visited this hospital on 6th February, 1945.

The daily average number of patients during 1943-44 was 1297·82, (males 1,034·41, females 263·41) of whom 424·04 (males 389·72, females 34·32) were Criminal patients.

This hospital is of a very high standard and compares favourably with the new Mental Hospital in Bangalore. It is in advance of the Bangalore Mental Hospital, as all patients are allowed beds, bed-linen and mattresses, whereas a large number of the patients in the Bangalore Mental Hospital sleep on mats on the floor.

The Medical Superintendent is a very able member of the Provincial Medical Service, Bihar, and holds the degree of M. B. (Cal.) and the D.T.M. & H. (Lond.). He was on the Staff of the European Mental Hospital for some time as Medical Officer, and later as Deputy Superintendent. He is anxious to obtain and prepare to study for a Diploma in Psychological Medicine in the United Kingdom, and I consider he is the right type for employment in a Mental Hospital Service.

The first Deputy Superintendent holds the M. D. in Psychological Medicine of Patna University, but has little clinical experience. I have stressed the need for a high standard and uniformity in M.D. degrees in India, and until such uniformity is attained, I think such Degrees cannot be seriously considered when making appointments.

The second Deputy Superintendent is M. B. (Cal.), with no special training in Psychiatry, while the remaining five Medical Officers hold the L.M.P. Diploma.

In the Female Section there is a Matron and four nurses—all general trained—and the management of the patients and the Wards is superior to any other hospital I have visited on this tour.

There are no Occupational Therapists, but a well organized Work Department exists and its beneficial effects are evident. The department gives an impression of industry and contentment.

The Diversional Therapy Department is being developed, and the hospital has its own Cinema, and well-equipped entertainment rooms. These are, at present, located in one of the Wards, but a separate unit is desirable, and I understood this will be considered as soon as building programmes can return to normal.

The per capita rate per annum is Rs. 570-10-0 — much higher than any other Mental Hospital for Indians only, but the additional expenditure is reflected in the whole atmosphere of the institution — it is a Mental Hospital.

The ratio per cent. of cases discharged recovered to direct admissions in 1943-44 was 24·53, a very creditable figure, in view of the large number of Criminal patients, who can only be discharged after their individual cases have been considered by Government. It is the exception for any criminal cases to be discharged in less than five years from the date of their admission to hospital.

The students from Patna University attend the hospital for a period of three weeks, for what is described as intensive training in Mental Diseases in accordance with the Curriculum passed by the Board of Studies of the Patna University. The number of lectures per Course is 20, and 34 students attend in two batches. I consider it is not fair to call upon the present Medical Superintendent to conduct these courses of instruction. It is a very heavy burden for which, in my opinion, he is not yet equipped. I do not consider Post-Graduate Students would benefit from attendance at this institution until the standard of the Professional Group has been raised.

European Mental Hospital, Ranchi.

This hospital is built on modern lines and has accommodation for 300 patients. It was visited recently by the Consultant Psychiatrist of the British Army, who has had a vast experience of Mental Hospitals all over the World. He considers that the European Mental Hospital, Ranchi, compares favourably with any hospital he has visited. Other eminent Psychiatrists have made similar comments.

The Superintendent is a Specialist in Psychiatry. The Deputy Superintendent is on Military Service and is a Graded Psychiatrist, and the two House Physicians have 21 years and 16 years service in the Hospital respectively. The present Deputy Superintendent is employed as a temporary measure, but is not a Psychiatrist.

There is at present a Military Wing of 60 beds and the Officer Commanding is an experienced Psychiatrist, a former Deputy Superintendent of one of the largest Mental Hospitals in England, and Psychiatrist to the Scottish Command. There is also one R. A. M. C. officer who has a limited knowledge of Psychiatry.

During the past two years the ratio per cent. of patients discharged recovered to direct admissions averaged 56·33, and 4 per cent. were discharged improved.

The number of Voluntary patients admitted during 1943-44 was 113 as compared with 86 the previous year. In both years there were more Voluntary patients than Committed patients.

The per capita cost per annum in 1943-44 (exclusive of interest on loans) was Rs. 2,015, but in previous years was between Rs. 1,200 and Rs. 1,300.

The Hospital is well staffed.

Nursing.—One Matron and twelve General Trained Nurses. The Matron holds triple qualifications—General Training, C.M.B., and the Certificate of Proficiency in Mental Nursing of the Royal Medical-Psychological Association. Of the twelve Nurses seven hold the Certificate of Proficiency in Mental Nursing, and had it not been for the present emergency with constant changes among the junior Sisters, all would have been in possession of the Royal Medico-Psychological Association Certificates.

Attendants.—There are 94 attendants (males 46, females 48) most of whom have gained the First Aid Certificate, and the Home Nursing Certificate (St. John's Ambulance), but, in addition, there are 148 private attendants (males 57, females 91).

This high proportion of nurses and attendants is to a large extent the reason for the success of the Hospital as a treatment centre. Seclusion and restraint are not permitted, and all maniacal or excitable cases are treated by hydrotherapy or continuous narcosis.

The Occupational Therapy Department is in charge of a General Trained Sister who holds a diploma in Occupational Therapy and there are in addition two full-time Occupational Therapists. There are 25 instructors in the various arts and crafts.

Diversion—This department is highly developed and includes a modern Gymnasium under the control of a qualified physical culturist. There are entertainment halls, library, and other amenities conducted by qualified personnel. The Cinema at the Indian Mental Hospital is frequently placed at the disposal of this hospital.

Outdoor Amusement.—There are tennis courts, football, hockey, and cricket grounds situated outside the hospital.

Chapels.—There are Church of England and Roman Catholic Chapels and Chaplains of both denominations are detailed for duty in the hospital.

Treatment.—All modern methods of treatment are employed, and there are electrical convulsant Therapy units in both Male and Female Sections, and as soon as circumstances permit, an electro-encephalography unit will be installed.

There is a well-equipped operation theatre and laboratories, etc. A special Psychological Laboratory has been built, but there is, at present, no Psychologist on the staff, and the Medical Staff have little time for experimental work, as they are fully occupied in the Wards.

Teaching.—Post-Graduate courses are held, and during 1943-44 seven students attended the Course of Instruction. The Course includes Psychiatry (Clinical and Theoretical), Forensic Psychiatry, and Mental Hospital Administration. The instruction covers the ground in Psychiatry only, for the D.P.M. or the M. D. in Psychological Medicine. There are no facilities for the study of advanced Anatomy, Physiology and Histology of the Central Nervous System, or Experimental Psychology.

The Hospital is recognised as a training school for the D.P.M. by the University of London and as a Teaching School for Nurses by the Royal Medico-Psychological Association.

Six Post-graduate students could be trained per annum, and the Course would cover the requirements for the Medico-Psychological Certificate, or the six months hospital residence required by the regulations for most Diplomate in Psychological Medicine. Students preparing to take the Diploma in Psychological Medicine would require to proceed to the United Kingdom to complete the requisite course.

A sum of Rs. 100 per month per student is payable to the Board of Trustees of the Hospital.

GENERAL REMARKS.

The Mental Hospitals.

Mental Hospital Administration is a Speciality to which men should devote their entire lives. They can then formulate policies arising from their experience and calculated to bring advantage to the patients.

Industry has pointed the way for hospital administration. Efficient management is an indispensable factor in organization. Industrial leaders insist that a man who has been thoroughly trained in a special line of business, and has shown characteristics that stamp him as a leader, is cheap at any price. He is the one to promote business and safeguard industrial interest, but Government rarely applies this lesson. Seven of the largest Mental Hospitals in India have men appointed as Superintendents at salaries that a first class Mechanic in Tatas Works would scorn, six of them have little or no Post-Graduate experience or training in Psychological Medicine, and yet these men have been charged with the supervision of large hospitals, and what is more important, human lives. The Deputy Superintendents and subordinate Medical Staff are more or less of a temporary nature, utterly untrained in Psychiatry. Broadly speaking, the Institutions function, stagnant and dead, with a routine custodial care, in some instances of a very poor standard, meted out to patients.

The main interest, in the past appears to have been economic, but, in the future, the professional group must be the dominant one.

Every Mental Hospital which I have visited in India is disgracefully under-staffed. They have scarcely enough professional workers to give more than cursory attention to the patients, to say nothing of carrying a teaching burden. With an average ratio of 1 Medical Officer to 200 patients or more, there can be little time for the instruction of students. Government will have to work on the theory that more and better trained professional personnel is the urgent need of Mental Hospitals. The policy of increasing bed capacity, which incidentally has led to gross overcrowding in most of the Mental Hospitals rather than personnel, has been stressed in the past, but the cure of mental patients and the prevention of Mental Diseases will not be accomplished by the use of bricks and mortar.

Two Responsibilities confront us—

(*i*) Instruction of Personnel.

(*ii*) Instruction of Students who come for practical experience in Psychiatry.

The resources of the Medical Schools and Mental Hospitals in India do not permit of Post-Graduate teaching, and for the training of personnel for the Mental Hospitals, India will have to rely on foreign assistance for some years to come—ten years at least.

The Course of Instruction for a Diploma in Psychological Medicine must embody an entire Mental Hygiene Scheme. Emphasis on prophylaxis and prevention must be in line with the principles of modern preventive medicine.

This is a suitable time for Government to take account of stock, overhaul resources, and re-chart the Course for the next 30 years. Public opinion will soon demand that patients in Government Mental Hospitals must be cared for by experienced and well-trained individuals

Medical Superintendent.—It is desirable to have a Superintendent who is well qualified. Every Psychiatrist has seen cases in which eye specialists have tried to correct failing vision by refraction in a patient suffering from G. P. I. Surgeons have frequently been guilty of operating on hysterics

and psychiatrists have called the complaints of patients, somatic delusion until the patient finally died of cancer.

In addition to holding the Diploma in Psychological Medicine, it would be desirable for the Medical Superintendent to hold a higher degree in Medicine or Surgery.

The Deputy Superintendents should also be highly qualified men with a D. P. M. and capable of understudying the Superintendent. There should be a Deputy Superintendent in both Male and Female Sections of every Mental Hospital.

The Senior Medical Officers in both Male and Female Sections should hold the Diploma in Psychological Medicine, and understudy the Deputy Superintendent.

The ultimate aim should be that all Medical Officers must obtain the Diploma in Psychological Medicine, and it is to be hoped that the Universities of Bombay and Calcutta will, in the course of a few years, be able to grant the diplomas, and, perhaps later, the Madras and Punjab Universities. I think this rush by all Provincial Universities to institute Post-Graduate diploma is premature. The trained personnel will not be available for years.

There are four very old Medical Schools in Scotland with much greater facilities for teaching Psychiatry than any School in India, but, so far, only Edinburgh University has instituted a Diploma in Psychiatry.

In London there are only two Schools which conduct courses for the Diploma in Psychological Medicine, and, as far as I am aware, Leeds and Manchester are the only Universities in England which have a Diploma in Psychological Medicine Course. The London University and the Royal College of Physicians and Surgeons grant a Diploma in Psychological Medicine, but merely function as examining bodies.

There is no uniformity in the teaching of Psychiatry in any of the Schools in India. Carefully thought out courses of instruction are requisite for such a programme both for M. B. and Post-Graduate students. It is no use pretending that Psychological Medicine is being taught anywhere in India. Students cannot be exploited much longer, but must be given something that will repay them for their hard work and sacrifices.

My tour has brought home to me that in a teaching programme the Mental Hospital will form the one stable factor. Clinics may come and go, organizations for the correction of this and that difficulty may come into existence, flourish and fade, but the Mental Hospital goes on hence the need for a modern Mental Hospital within easy reach of the Medical School. The Mental Hospital can become a tower of strength in the Psychiatric world if it will turn its attention to a more active Psychiatric leadership.

I have not been convinced that the utilization of Honorary Physicians in India is a success in a teaching progamme. As already pointed out, one finds that Honorary Physicians are, as a rule, very jealous of their prerogatives, but take their responsibilities lightly. There are, of course, exceptions.

I have had talks with several "Honorary Physicians", and there is a feeling of discontent among them. Most of them are overburdened with personal problems and preoccupied with earning a livelihood. They cannot give of their best to a teaching programme, if harassed by financial worries, and no Government has the right to ask it.

To obtain real service in Mental Hospitals, Teaching Programmes, Psychiatric Clinics, Social Services, etc., it is essential to have a Mental Health

Service, and that Medical Officers should be specially recruited for it. Officers entering this Service must be made to realize that they are entering a very fine service for which they will have to train rigorously.

It is essential that a systematic plan be under the control of one individual, whose main business and responsibility it is. Without such centralization we shall get wasted effort and duplication. It will be necessary to visualize a plan which may take years to mature. In India, it is obvious that the Medical Superintendents of Mental Hospitals must assume greater responsibilities. The Mental Hospitals have become isolated units, having little contact with the Community they serve, and in most cases, are objects of fear and suspicion.

The Medical Superintendent of the Mental Hospital must become the Chief Medical Officer, Mental Health Service in his area or Province, and become the adviser in Mental Health matters to the Chief Administrative Medical Officer. In addition he should be ex-officio the Senior Physician and supervise the work of all Psychiatric Clinics. He should be the individual to coordinate and lead any Mental Hygiene movement, and to supervise the work of Social Services. As the Mental Health Service expands, he may have to take over the Mental Health Department in the office of the Chief Administrative Medical Officer.

He should therefore have competent Deputy Superintendents, so that he can be at liberty to inaugurate and carry out, as rapidly as circumstances will permit, a comprehensive programme dealing with all general phases of the Mental Diseases problem and education.

Every Mental Hospital in the vicinity of a Medical School must become a teaching hospital, and the professional group in such a hospital must be the dominant one. Here again the Medical Superintendent must be the Director of Clinical Work.

The teaching hospital, from a therapeutic point of view, is superior to he one which does not have an educational outlook. The mere presence of a group of young students, interested, enthusiastic, and intellectually alive, prevents hospital inertia. Teaching and being taught stimulates every member of the professional staff, and keeps the entire organisation on the *qui vive*. The sum total to an educational programme is to place the patient and his needs on a higher plan.

No one will deny the necessity for highly trained Specialists in the various fields of Psychiatry in India. At present their number is negligible, and of these, the more experienced Clinicians are nearing the age of retirement.

The service must be made attractive, and graduates in medicine with a satisfactory academic career behind them must be selected. They should be given a resident appointment in a Mental Hospital in India for 6 to 12 months and then sent to the U. K. or the U. S. A. for Post-Graduate training. If twelve scholarships were granted annually for ten years there would be a nucleus of men to take over the responsible posts as Superintendents, and Deputy Superintendents, and later leadership in this Speciality. The practice of granting Study Leave to Graduates in the Medical Services might be continued, but few can avail themseves of the privilege. The Post Graduate student has to expend a large sum in Travelling Expenses, which, in many cases, is borrowed. He hopes to recompense himself later in Practice, but this is not feasible in a Mental Service, and must be taken into account when Graduates are sent abroad. No student should receive any fellowship in excess of maintenance, cost of books, and instruction. To pay any one to take an education indicates that the educational offering is not very valuable.

Men for Subordinate Posts may be trained in this country, and until such time as Medical Colleges can institute a uniform and practicable syllabus for a Diploma in Psychological Medicine, I would suggest that Medical Officers be encouraged to obtain the Certificate Psychological Medicine (M.P.C.) granted by the Royal Medico-Psychological Association. There is a strong membership of the Indian Division of the Royal Medico-Psychological Association, and there would be no difficulty in arranging for the examination to be held in India.

A beginning in this modest manner (it was done in the U. K.) would be preferable to granting Diplomata of a low standard which might later prove an embarrassment to Government. The more able men who obtain the M.P.C. would probably later proceed to a Diploma in Psychological Medicine. As an incentive Medical Officers who obtain a D.P.M. or M.P.C. should be granted a Special Pay. All holders of the D.P.M. in the Mental Service in the U. K. received an annual allowance of £50. If Universities are to grant an M. D. degree in Psychological Medicine, there should be a uniform high standard for the whole of India.

The general standard of the Mental Hospitals I have seen is poor. Economic factors will always affect scientific considerations. It may not be possible to do as much Psychiatric research as one desires because sufficient money is not available, but certainly the quality of professional work is subject to no such limitations. There may be too few physicians, but this is no legitimate reason why administrative medical officers should not get the best ones available, and hold them to a high level of professional performance. Financial security is not the first requisite to hospital progress — the desire and enthusiasm for progressive change must always come first.

There is an urgent necessity for better trained Nurses. On the nursing staff of a Mental Hospital depends the harmony which exists between the hospital and patient, and that may mean the difference between success and failure of treatment. If a patient is constantly irritated by tactless handling, exasperated by petty tyrannies, and annoyed by inflexible rules enforced by poorly informed attendants, and improperly trained nurses, he soon develops the idea that his welfare is not the first consideration. There is a type of Psychological abuse of mental patients which may be much more disastrous than any kind of physical abuse.

An institution with a poorly trained and inadequate nursing staff starts with a definite handicap which will seriously interfere with its efforts. The social environment as represented by the nurse and attendant is of much greater importance than the colour of the Wards, selection of the furniture, cinemas, radios, etc. Pleasant-surroundings are a hollow mockery when a small minded unintelligent attendant constantly thwarts the patient in his attempts to enjoy them.

The Psychiatric Nurse performs a more difficult and exacting task than any General Nurse, and she should have correspondingly better educational standards. Mental Hospitals have not taken their educational responsibilities too seriously. There can be no valid excuse for the failure of a Mental Hospital to instruct its own people. Machinery exists in India for the granting of a Certificate for Proficiency in Mental Nursing by the Royal Medico-Psychological Association, but, so far, only the European Mental Hospital at Ranchi has trained nurses for this Certificate. All Mental Hospitals in India which employ General Trained nurses should take immediate steps to procure recognition as training schools by the Association, and they should

train and encourage their nurses to Cobtain the Certificate. This will mean a sacrifice in time, but administrative Medical Officers should bring home to superintendents of Mental Hospitals that they have a responsibility in this field, and must prepare to carry out that responsibility. The Board of Trustees of the European Mental Hospital at Ranchi stipulate that all Nursing Sisters must, during an early stage of their Service, obtain the Certificate of Proficiency in Mental Nursing, and the majority of them did. Before the war there were numerous indications that good nurses were turning to Psychiatric nursing, and there was a large waiting list of good candidates for employment at the European Mental Hospital. This may be due, in some respect, to the reputation this institution has acquired, and to the generous terms of their employment. The aim should be that all wards, male and female, should have a carefully selected, will-trained Psychiatric Nurse in charge. This may take years to achieve in India, but I maintain that it is practicable.

Given a competent Psychiatric Nurse in every ward, the question of attendants remains. Where are we to get the Ward Personnel? Are we to go on with the present Personnel, who do not receive training even of the most superficial character?

It is surprising that many of the individuals placed in a ward of filthy, destructive, violent, profane, noisy patients, can maintain their emotional equilibrium and remain human. It is only because of their fundamental decency, and not because they have any spark of real understanding of the basic situation. I have been connected with Mental Hospitals too long not to appreciate the difficulties inherent in this situation, but, in spite of these difficulties, I cannot feel that attempts to change the situation are impossible. Something can and must be done to increase the number and improve the quality of Ward Personnel. At the European Mental Hospital, Ranchi, all attendants, male and female, are required to attend courses of instruction in First Aid, and Home Nursing, and a very large number have already obtained the St. John's Ambulance Certificate in both subjects, and it is amazing what this small beginning has achieved. The nursing care and treatment of the patients improved to an enormous extent. The utilization of young and immature people—and there is much of it—for ward work, is, in my opinion, a very questionable procedure. Adolescents should not be in charge of Psychiatric patients. They are not sufficiently stabilized emotionally to be placed in such a situation.

The Indian Division of the Royal Medico-Psychological Association have under consideration a scheme for the granting of a Certificate to Ward Attendants, and at Ranchi it is proposed that an attendant would in his first year of service obtain the First Aid Certificate, in the second the Home Nursing Certificate, and in the third the Certificate in Mental Nursing. Hand Books in the Vernacular have already been published.

For the Certificate in Mental Nursing the Course would be of an elementary character, and a course of about 14 lectures would suffice. My suggestion for the lectures is as follows:—

1. History of Mental Disorder.
2. Mental Disease as a Public Health Problem.
3. The Infection—Exhaustion Psychoses.
4. The Toxic Psychoses.
5. General Paresis.
6. The Symptomatic Psychoses.

7. Arteriosclerotic and Senile Psychoses.
8. Borderland States.
9. Manic-depressive Psychoses.
10. Schizophrenia.
11. What is Mental Hygiene ?
12. Mental Hygiene of Childhood.
13. Mental Hygiene of Adolescence.
14. The Human Personality.

Both theoretical and practical instructions are essential. It will be seen that the above scheme of lectures, if accepted, will introduce the Attendant to Psychiatry through the Psychoses which have a direct physical causation. The simpler the course, and the more gradually it develops from the physical to the highly complex psychological, the more successful it will be. The war has, unfortunately, delayed this scheme, but it is hoped that the Indian Division of the Royal Medico-Psychological Association will meet this year. Most of the Medical Superintendents of Mental Hospitals in India and Ceylon are members of the Association.

The custom of generalizing about ratios of Ward Personnel which takes no account of admission and discharge rates, the kind of service given to the patient, or the number of essential subsidiary departments carried on, is a mistake. All of these must be considered when Ward Personnel ratios are being worked out. (See notes under European Mental Hospital, Ranchi).

Psychotics adjust themselves at different levels.

A. Social Recovery — (the ideal aim).

B. Social Institutional Adjustment.

C. Institutional Adjustment.

D. Deterioration.

It was depressing to find the enormous number of patients who have "deteriorated", and what was worse, the general attitude of pessimism and indifference which characterised the situation.

The standards of care which prevail in the hospital are responsible to a considereable extent for the level at which patients adjust. If the ideal of the institution is the discharge of patients, if the professional staff is held to a high level of accountability for such discharges, and if the administration is called upon to defend continued residence in the institution, the last three groups will not be as large as they are. The fourth group is a definite indictment of the therapeutic standards in the Mental Hospitals in India. The vast majority of these patients have been permitted to slump into this condition of deterioration because the routine was not sufficiently insistent and compelling to keep them in reality even for brief intervals.

In all the hospitals I visited there is a need for a more systematic and better conceived plan of work therapy. None of them except the European Mental Hospital, Ranchi, employ Occupational Therapists. In advanced countries, Occupational Therapy has developed to the point where its representatives have become indispensable to many General Hospitals, Tubercular, Orthopaedic, and Mental Hospitals. In Occupational Therapy we have a powerful therapeutic weapon for the Psychiatric patient. Organized systematic work is better treatment than the careless haphazard occupation in some of the hospitals. The important thing is to create throughout the hospital an atmosphere of industry, and to make occupation an activity that is approved by the patients.

More can be done in the way of Diversional Therapy. A Mental Hospital with all modern types of therapy equipment, and installation is still a house of sorrow and discontent. Everything that can serve to alleviate any of this discontent should be utilized. Entertainment is therapeutic, it specialises the patients' mind and interest, and it is bringing him back to reality. Money spent on entertainment is a good investment, and the budget allotments under this head should be generous. Suitable programmes can readily be made available if the necessary funds are forthcoming.

All arteriosclerotic, decrepit and senile patients should be housed separately. They are fundamentally medical and nursing problems, and should be under the supervision of the Medical Services. Kindly and humane custodial care in special Homes would be more economical than treating them in Mental Hospitals. At least 50 per cent. of the patients in Mental Hospitals in India could be cared for in such Homes.

In the U. K. there has been a definite demand on the part of the public for psychiatric clinics, and fortunately there has been a definite swing away from the extravagant claims of early exponents of Mental Hygiene towards a recognition of the limits of preventive Psychiatry. While no specific preventive measures have been discovered enough sound knowledge has been accumulated to show that a continuance and extension of outdoor clinics is a logical procedure.

The Directorship of either an adult or child clinic is a full-time position. A successful Clinic will not remain so long, if it is the Secondary responsibility of anyone. The immediate establishment of Psychiatric Clinics in General Hospitals is not feasible in India at present, as there is no trained personnel. To establish them before efficient personnel is available would be extremely bad propaganda. I have already made the suggestion that the Medical Superintendents of Mental Hospitals should be ex-officio the Senior Physicians of all such Clinics. There is no reason why the General Hospital should not, in due course, bear its share of mental disease prevention. It is a problem of Public Health, and as such is of interest to every agency interested in this important activity. The General Hospital sees patients in the pre-Psychotic stage, and they are in a favourable position to influence the education of Psychiatrists. When trained personnel is available, it is to be hoped that Psychiatric Departments in General Hospitals will be the rule rather than the exception.

These can only come when sufficient trained Psychiatrists and Social Workers are available. The collaboration of Psychiatrist and Social Worker results in a therapeutic programme which is better balanced than is possible when each works alone.

The actual contact with patients in the early stages of maladjustment will be through the General Practitioner, Teacher, Juvenile Courts, Probation Officer, Police, Social Worker, Y. M. C. A., Y. W. C. A., Boy Scouts, Girl Guides and Parents, but the Mental Hospital has a proprietory interest in the pre-Psychotic and delinquent child. The Child Guidance patient becomes the mental case of tomorrow. The patients who will be received by the Mental Hospital 10, 15, 20 years hence are in the schools, and many of them showing behaviour abnormalities that stamp them as potential Psychotics. It seems that the Mental Hospital has a grave responsibility in this field of prevention and must prepare to assume that duty as quickly as personnel can be secured and trained to do the work.

The stress laid upon work with children is entirely justifiable when one considers that prevention is most hopeful in childhood. It is the golden age for Mental Hygiene. The Child Guidance Clinic will be the important phase of preventive psychiatry. It will take many years to plough the ground and prepare it for the seed. Even administrative Medical Officers will probably look on this extension of clinical facilities with a jaundiced eye. The preparation must be a period of organization and education. The average man has little understanding of this kind of work with children. He is apt to think that a Child Guidance Clinic is interested only in feeble-minded or psychotic individuals. These Clinics should in due course form a part of the Pediatric Department of every General Hospital.

In spite of considerable progress towards a more healthy attitude in regard to Mental Disease, the old ideas of disgrace and stigma die hard, and the prejudice of the people must be taken into account. The relationship of Psychiatry and the Law requires attention. If the Mental Hospital is to do good work it must have the sympathy and support of the community. The walls of ignorance, superstition and suspicion will have to be torn down and a friendly relationship established. We must teach the people that we will staff our hospitals correctly, and that Mental Hospitals are directed by honest well-trained scientific men who are trying to render service to the patients. Good-will towards Mental Hospitals must be created. The process will be long, but may be built by:

(1) Letting the community know that the Menta Hospital has a real service to be given.

(2) Convincing people that they need what it has to offer.

(3) Making it easily obtainable.

(4) Making people glad that they can have what the institution has to offer.

The goal of such educational effort should be more than to add to the prestige of the hospital. The ultimate purpose should be Mental Health. This is the day of Preventive Medicine. Psychiatry should be thinking in terms of prevention as well as cure.

I am appending to this Report copies of the undermentioned, which I forwarded some time ago to every administrative Medical Officer in India. I find they are being seriously considered, and I would suggest that they be carefully examined by the Committee.

*(1) The Interim Report on the Recommendations regarding the Mental Health Service by the Royal Medico-Psychological Association.

*(2) Recommendations regarding the Future of Psychiatry by the British Medical Association.

*(3) The Royal Medico-Psychological Association Revised Recommendations.

SUMMARY.

The majority of the Mental Hospitals in India are quite out of date, and are designed for detention and safe custody without regard to curative treatment. The worst of them—the Punjab Mental Hospital, the Thana Mental Hospital, the Agra Mental Hospital, and the Nagpur Mental Hospital savour of the Workhouse and the Prison, and should be rebuilt. The remainder should be improved and modernized in accordance with the suggestions of the Medical Superintendents. Bombay and Calcutta urgently

* Not printed.

require modern Mental Hospitals to meet both the needs of the community and the Medical Colleges, and these should form part of any schemes for reconstruction or expansion. The Superintendent of the Indian Mental Hospital, Ranchi, has put forward schemes for expansion, but this hospital is quite large enough for any single Psychiatric Unit, and it is too far from Calcutta to be of service in any teaching programme.

There is gross inadequacy in the medical personnel in all the Mental Hospitals both numerically and in specialised qualification. Most of the Medical Officers employed as Superintendents and Deputy Superintendents possess neither the status nor the experience which would justify the description of Consultant or Specialist in the ordinary usage of that word. A Mental Health Service is necessary with improvement in the status, pay, and conditions of service of the Medical Staff, with increased opportunities for purely professional work.

To remedy these defects foreign assistance will be required for at least ten years. Generous terms should be offered to highly qualified Specialists to take charge of Mental Hospitals, the teaching programmes, and to organize the Social Services during the transition period. Selected graduates (as many as possible) after a period of residence in a Mental Hospital in India should be sent to the U. K. or the U. S. A. for Post-Graduate training in Psychological Medicine. For some time, subordinate Medical Officers might be encouraged to obtain the Medico-Psychological Certificate, granted by the Royal Medico-Psychological Association.

The numerical and professional inadequacy of the Nursing staff and Attendants requires urgent attention. There is no reason why administrative Medical Officers should not tackle this problem immediately. The Indian Division of the Royal Medico-Psychological Association would be prepared to assist.

Psychiatry developed as the method of treatment of those individuals whose mental illness necessitated segregation from the rest of society. This distinction, although important socially, is medically irrelevant, for there is only a difference of degree between the majority of patients in Mental Hospitals and the far more numerous sufferers from less severe mental disorders. For one case of major mental illness there are, undoubtedly, many cases of minor mental illness. Preventive Psychiatry, therefore, outside the Mental Hospital is of paramount importance. To open Psychiatric clinics in General Hospitals before there is trained personnel to conduct them would be bad propaganda. In the U. K. modern developments in Mental Health Services are doing much to lessen fears and prejudices among the public, but they are still a factor to be reckoned with, and in India the greatest caution will be necessary. The movement to open Psychiatric Departments in General Hospitals in the U.K. and U.S.A. has coincided with the development of methods of treatment, which have made it possible to treat successfully as out-patients many who would formerly have required inpatient treatment. Events have thus lent their support to the movement to emphasize the links between Psychiatry and General Medicine to the advantage of both. It is vital that in any future organization of Medicine, Psychiatry shall not remain segregated, and it should take its place in the general scheme, subject to the provision of adequate and well trained personnel.

The few Psychiatric Clinics which have been opened in connection with General Hospitals in India are of the make-shift variety, and the facilities for diagnosis and treatment are not satisfactory. Where the Mental Hospitals are accessible it may be desirable to set up consulting centres under their own roofs. This experiment has proved successful in the Bangalore Mental Hospital and for Service Patients at the European Mental Hospital, Ranchi. Whatever steps are taken with regard to Psychiatric Clinics they will be adequate only if the arrangements allow Psychiatrists in Mental Hospitals to engage actively in out-patient work in the Psychiatric Departments of General Hospitals. The Senior Clinician in the Mental Hospital should hold the senior post in the Psychiatric Department of the General Hospital. Junior mental hospital doctors should be appointed as assistants in General Hospitals where they would take part in the work of the psychiatric out-patient department. If all hospital medical staffs were adequately remunerated, and if domiciliary work became a recognized part of the hospital service, it would become possible for an interchange between Psychiatric Staff of Mental and General Hospitals. Unless arrangements are made on these lines there is a danger that Psychiatrists on the Staffs of General Hospitals will ignore or be unaware of the opportunities offered by Mental Hospitals and the progress in therapy or research being made in them.

In the Memorandum submitted by me to the Health Survey and Development Committee in February 1944, I stressed the need for Central Control. This special arrangement for the coordination and direction of Psychiatric work is necessary because of the many intricacies of the subject, technical, sociological, and legal. Provincial Administrative Medical Officers, as a rule, have had no specialized training in Psychiatry, and if the Mental Health Services in the country are to be directed by them, the integration of Psychiatry into the whole medical structure, which is so desirable, will be frustrated.

The Director-General or the Principal Medical Officer of a National Health Service, who will be advising the Minister, will himself be advised by various senior officers concerned with clinical services, preventive medicine, etc., and it is at this level that a Directorate of Mental Health fits in. I have suggested that for the present the Superintendent of the Mental Hospital should advise the Provincial Administration on Mental Health problem, as the Mental Health Service develops there should be at the periphery administrative officers of Mental Health, who must have direct access to the Director of Mental Health at the Centre, as well as relations with Provincial authorities. In this way the Social and Preventive aspects of Psychiatry will be given full opportunities for development. Grants or subsidies should only be made to Provincial Authorities subject to adequate control and supervision from the Centre.

The cardinal points in the Indian Lunacy Act, 1912, have outlived their usefulness. Legal restraint has undoubtedly made the public reluctant to avail themselves of Mental Hospitals, and has militated against the early treatment of mental illness. Legal changes are imperative which will make provision for treatment of patients without the stigma of certification, but this is a subject outside the scope of this report. It might be suggested, however, that all private Mental Hospitals, Nursing Homes and pay-beds for mental patients should be brought under Government control and supervision.

Many patients of this category are being treated in Mental Hospitals and the arrangement is most unsatisfactory.

Legislation to deal with this very wide problem is urgent. This question is also outside the scope of this report, but any scheme will require the provision of suitable institutions and Colonies and it is suggested that in the Post-War period many suitable institutions will be available; for instance the Military Camp at Ramgarh in Bihar would require little or no alteration to form a suitable Colony for 40,000 to 50,000 Mental Deficients. Doctors to be employed in such Colonies will, in addition to training in Psychiatry, require special training in Mental Deficiency.

A Mental Health Service should cover at least the Psychiatric requirements in Schools, Child Guidance Clinics, Psychiatric advice to approved schools, Borstal Institutions, Juvenile Jails, Remand Homes, Colonies of the Hostel type for delinquents and Psychopaths, but to formulate schemes will be the duty of the Directorate of Mental Health.

The public still regards the Mental Hospital, and all Services connected with Mental Health with unwarranted dread, and the Psychotherapist with doubt, derision, and awe. Education of the public must proceed *pari passu* with the development of the Mental Health Service.

Finally, I would stress that the conditions in some of the Mental Hospitals in India today are disgraceful, and have the makings of a major public scandal. It is suggested that a copy of this report be sent to every Administrative Medical Officer in India.

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APPENDIX 22.

MENTAL HOSPITALS IN INDIA WITH THEIR BED STRENGTH AND PLACE OF LOCATION.

Provinces.	*Location.*		*No. of beds.*
1. Assam ..	Tezpur Mental Hospital, Assam ..		716
2. Bengal ..	No mental hospital. Arrangements are made with the Bihar Government for the admission of mental cases in the European and Indian Mental Hospitals at Ranchi. There are number of private institutions for Lunatics.		
3. Bihar	European Mental Hospital, Ranchi ..	[illegible]	
	Indian Mental Hospital, Ranchi ..	1,380	
			1,651
4. Bombay ..	Central Mental Hospital, Yeravda ..	1,227	
	N. M. Mental Hospital, Thana ..	390	
	Mental Hospital, Ahmedabad ..	267	
	Mental Hospital, Ratnagiri	176	
	Mental Hospital, Dharwar	199	
			2,259
5. C. P. & Berar ..	Mental Hospital, Nagpur		600
6. Delhi	*Nil.*		
7. Madras ..	Mental Hospital, Madras	888	
	Mental Hospital, Calicut	364	
	Mental Hospital, Waltair	164	
			1,416
(Criminal lunatics are confined in the Mental Jail at Cuddalore).			
8. N. W. F. P. ..	Mental Barracks 2 in the Central prison, Peshawar, under separate staff ..	140	140
9. Orissa ..	Cases are sent to Bihar, Indian Mental Hospital, Kanke (Ranchi) where 60 beds are reserved for cases coming from Orissa.		
10. Punjab ..	Punjab Mental Hospital, Lahore ..		1,408
11. U. P.	Mental Hospital, Agra	617	
	Mental Hospital, Bareilly	408	
	Mental Hospital, Benares	331	
			1,356
12. Sind	Sir C. J. Mental Hospital, Hyderabad ..		343
Indian State.			
13. Mysore ..	Mysore Mental Hospital, Bangalore ..	300	300
	Total bed accommodation		10,189

APPENDIX 23.

STAFF AND ESTIMATES OF COST FOR THREE TYPES OF MENTAL INSTITUTIONS:

Recurrent Expenses of a Thousand-bed Mental Hospital.

	—	Grade.	Monthly expenditure in Rupees.
	Psychiatrist Superintendent	1,000—50—1,500 ..	1,000
1	Psychiatrist Deputy Superintendent ..	750—50—1,000 ..	750
18	Psychiatrists	350—25—650 ..	6,300
8	Occupation Therapeutists	200—10—300 ..	1,600
1	Psychologist	250—15—475 ..	250
2	Psychiatric Social Workers	250—15—475 ..	500
1	P. Assistant to Superintendent ..	300—15—525 ..	300
1	Senior Matron	300—10—450 ..	300
2	Junior Matrons	250—10—350 ..	500
50	Nurses	125—5—200 ..	6,250
500	Attendants	35—5—50 ..	17,500
50	Menials	20—1—30 ..	1,000
10	Clerks, Accountant, Storekeeper ..	100—5—200 ..	1,000
1	Recorder Statistician	200—10—300 ..	200
1	Head Cook	40—1—50 ..	40
10	Cooks	30—1—40 ..	300
15	Durwans, Peons, etc.	25—1—30 ..	375
	Food @ Rs. 25 per head	....	25,000
	Medicines, Chemicals, etc.	....	2,500
	Washerman, Barbar, Darzi	....	1,000
	Repair and Replacements of beddings, crockery, etc.	....	4,000
	Occupation Therapy Material ..	....	5,000
	Electricity, Telephone, coke for boiler, etc.	....	2,000
	Maintenance of Grounds, Garden ..	....	1,000
	Miscellaneous, including stamps, stationery, form, etc.	....	4,000
		Total ..	82,665
		Annual Recurring Expenditure	9,91,980
		Annual per capita expenditure for 1,000 patients, say ..	1,000

The entire staff is to be provided with free unfurnished quarters.

There will be an outdoor psychiatric clinic and a child guidance clinic attached to the hospital and conducted by the staff.

Capital Expenditure on buildings, equipments, etc., will be approximately Rs. 10,00,000.

All pay mentioned above is consolidated and no special allowance is recommended.

Recurrent Expenses of a Thousand-Bed Mental Deficiency Home.

	—	Grade.	Monthly expenditure in Rupees.
1	Psychiatrist Superintendent	850—25—1,000 ..	850
2	Psychiatrists	350—25—650 ..	700
1	Physician-General	300—25—500 ..	300
4	Psychiatric Social Workers	250—15—475 ..	1,000
4	Psychologists	250—15—475 ..	1,000
50	Trained Teachers	250—15—475 ..	12,500
1	Personal Assistant to Superintendent ..	300—15—525 ..	300
1	Senior Matron	300—10—450 ..	300
2	Junior Matrons	250—10—350 ..	500
25	Nurses	125—5—200	3,125
100	Ayahs—female attendants	35—5—50	3,500
50	Menials	20—1—30	1,000
5	Clerks including accountant, storekeeper etc.	100—5—200	500
1	Recorder Statistician	200—10—300 ..	200
1	Head Cook	40—1—50	40
10	Cooks	30—1—40	300
10	Darwans, peons, etc.	25—1—30	250
	Food @ Rs. 20 per head	....	20,000
	Medicines, chemicals, etc.	....	1,000
	Washerman, Barber, Darzi, etc. ..	....	1,000
	Repair and Replacement of Beddings, Crockery, etc.	....	4,000
	Electricity, Telephone, Coke for Boiler, etc.	....	2,000
	Maintenance of Grounds, Gardens, etc. ..	....	1,000
	Miscellaneous including stamps, stationary, etc.	....	4,000
		Total ..	59,365
		Annual Recurring Expenses — 12 × 59,365 =	7,12,380
		Annual per capita expenditure for 1,000 patients = say ..	700
		The entire staff is to be provided with free unfurnished quarters.	
		Capital Expenditure on buildings, equipments, quarters for staff, etc., approximately= ..	10,00,000

Recurrent Expenses of a Thousand-Bed Mental Home for senile and incurable cases.

	—	Grade.	Monthly expenditure in Rupees.
1	Psychiatrist Superintendent	850—25—1,000 ..	850
2	Resident Psychiatrist	350—25—650 ..	350
2	General Physicians	300—25—500 ..	600
1	Psychologist	250—15—475 ..	250
1	Personal Attendant to Superintendent ..	300—15—525 ..	300
1	Senior Matron	300—10—450 ..	300
2	Junior Matrons	250—10—350 ..	500
25	Nurses	125—5—200 ..	3,125

Recurrent Expenses of a Thousand-Bed Mental Home for senile and incurable cases.—(contd)

		Grade.	Monthly expenditure in Rupees.
75	Male Attendants	35—5—50	2,625
75	Female Attendants or Ayahs ..	35—5—50	2,625
50	Menials	20—1—30	1,000
5	Clerks including accountant, store-keeper etc.	100—5—200	500
1	Recorder Statistician	200—10—300	200
1	Head Cook	40—1—50	40
10	Cooks	30—1—40	300
10	Durwans, Peons, etc.	25—1—30	250
	Food @ Rs. 20 per head	....	20,000
	Medicines, chemicals, etc.	....	1,000
	Washerman, Barber, Darzi, etc. ..	....	1,000
	Repair and Replacement of Beddings, crockery, etc.	....	4,000
	Electricity, Telephone, Coke for Boiler, etc.	....	2,000
	Maintenance of Grounds, Gardens, etc. ..	....	1,000
	Miscellaneous including forms, stamps, stationery, etc.	....	3,000
		Total ..	45,815
		Annual Recurring Expenses 12 × 45,815 =	5,49,780
		Annual per capita expenditure for 1,000 patients—say	550
		The entire staff is to be provided with free unfurnished quarters.	
		Capital Expenditure on buildings, equipments, quarters for staff, etc., approximately = ..	10,00,000

APPENDIX 24.

*REPORT ON TOWN AND VILLAGE PLANNING IN INDIA.

By

B. R. KAGAL.

1. INTRODUCTION.

1. The Government of India, in the Department of Education, Health and Lands, placed the services of the writer at the disposal of the Health Survey and Development Committee under the Chairmanship of Sir Joseph Bhore to advise the Committee on town and village planning. The Committee desired " to have a picture of what has been done and what should be done in the future in order to promote Town Planning as an integral part of the development of civil life on orderly lines in urban and rural areas." [The Secretary's (Health Survey and Development Committee) letter, 16-1/G of the 19th September 1944].

2. The tour, lasting two months, from the 9th October, 1944 to the 8th December, 1944 included the following towns and the adjoining rural areas :—

Delhi, Simla, Lahore, Karachi, Hyderabad (Sind), Ahmedabad, Baroda, Bombay, Poona, Kirkee, Bangalore, Madras, Hyderabad (Deccan), Nagpur, Jamshedpur, Calcutta, Patna and Cawnpore.

3. Before commencing the tour, a set of four questionnaires (Appendix II) was issued for eliciting available information. The names of the institutions and persons to whom the questionnaires were issued are at Appendix III.

4. The list of those who have given replies to the questionnaires is at Appendix V. Details of memoranda received in the course of the enquiry are at Appendix VI. The list of persons interviewed during the tour is at Appendix IV.

5. The terms of reference set out by the Health Survey and Development Committee in their letter dated the 19th September, 1944 were very wide. The writer had to determine the scope of the enquiry consistent with the time limit of two months prescribed for the purpose. The object, therefore, was to make a rapid survey of the points outlined in the questionnaires. The principles underlying the issues raised and the problems suggested in the questionnaires are in their turn based on the memorandum already submitted by the writer, in February 1944, to the Committee—attached herewith as Appendix I.

6. The memorandum deals with the recent advances in the science and practice of town-planning with special reference to the English practice and it forms the general background of this enquiry and the recommendations made in this report.

7. Apart from the disadvantages inherent in a rapid survey of this nature, the present abnormal war conditions have tended to exaggerate and distort the normal situation and present a confused picture. Effort has been made to make due allowance for these disturbing factors.

8. Town Planning, as it is understood at present, is a provincial responsibility. Senior officers of the Provincial Governments and States, whom the writer was able to contact in the course of the tour, showed a keen interest in the problem and generally expressed a desire to obtain a picture of the conditions prevailing in their respective areas. While this could not be done, in detail, an attempt has been made to deal more fully, Provincewise, with the

*The appendices referred to in this report have not been printed

special features which at once mark out one Province or State from the others. This, it is hoped, would make the report more useful to the individual Provinces concerned. It should, at the same time, give a fair idea to the Government of India not only of the measure of success or failure attained but also of the working that produced the results. The conclusions drawn in the body of the report are based on the material contained in the Appendices referring to the different Provinces and States.

9. The section on " A short History of Town Planning in India " attempts to make a general survey of the situation. The other sections deal with the main aspects of the subject, *viz.*, Education, Legislation, Finance and Administration. Village planning, Location of Industry and Housing are dealt with in separate sections. The writer's suggestions for dealing with war structures are dealt with separately. In the body of the report as well as in the Appendices dealing with the Provinces and the States, the lines on which recommendations are to be made are indicated and the final recommendations, divided into two categories, one the short term and the other the long term are embodied in the last section.

2. A SHORT HISTORY OF TOWN PLANNING IN INDIA.

10. The history of town planning in India has been, and is, an unequal and continuous struggle. It began in 1912 with the " Battle of the Sites " on the question of the selection of a site for the location of the new capital near Delhi (Appendix IX). Unfortunately, this has been the only initial, though spectacular, success in " the battle of science and of faith in the future of the new Capital against association and sentiment ". If the town planners of New Delhi have succeeded, it is not due to any weakness of the opposition but to the towering personalities of the experts and to the vision displayed by the then Viceroy and Governor-General (late Lord Hardinge) and the then Secretary of State for India, in supporting the town planners. Since then, the champions of town planning have consistently failed. Calcutta, Cawnpore and Madras have provided proof of these failures in the course of this rapid enquiry (Appendices XVII, XVIII and XIV). Indications of similar trends in other places are not wanting. Detailed enquiries in all the Provinces and States in this respect are liklely to be helpful to the areas concerned so as to avoid earlier mistakes, if any, when their respective town planning departments are established and begin functioning.

11. The real danger, however, is not so much of active hostility (though this cannot be ruled out completely in the absence of strong and informed public opinion) as of a steady decline in and neglect of the initial high standard. This is exemplified by accretions like Shahdara in the suburbs of New Delhi (Appendix IX).

12. The Government of India did not restrict their interest to the adoption of the latest town planning principles in the layout and development of the new Capital area. They impressed upon the Provincial and State Governments the need for regulating and controlling the growth of their towns. The first report of the New Capital Town Planning Committee is dated the 13th June, 1912. The Government of India's letter to the Madras Government on the subject, in 1912, runs as follows :—

> " The Government of India are of opinion that the question of town planning is one of great and growing importance. The great majority of large Indian towns and cities are surrounded by insanitary quarters which have been permitted to grow up without any sort of control and which are

often the starting grounds of plague and other diseases and a large population is crammed into an altogether inadequate space. There is also the growing tendency of suburban landlords to refuse to let agricultural land for building purposes and it is becoming more and more difficult to meet the increasing demand for land among large classes of the population for improved dwellings amidst more sanitary and healthy surroundings. The art of town planning is of comparatively modern growth, and it is only recently that town planning experts have arisen, in very small numbers even in Europe. The matter is therefore one in which progress must necessarily be slow, but the Government of India are of opinion that a beginning can be made by enquiries as to the necessity for town planning legislation and the form which such legislation should take."

13. The Government of India also indicated the main lines on which an Act might be drawn up. The suggestions were based mainly on the provisions of the English Housing and Town Planning Act of 1909. The Government of India further stated that the question of town planning, so far as it affected Indian cities and towns, needed examination from the following points of view :—

(*a*) the extension of existing towns, and

(*b*) the improvement and opening out of existing insanitary areas in old towns.

The Government of India opined that, where land on the outskirts of a town was mainly agricultural and could be acquired cheaply en bloc, the better policy would be for the local authority to purchase outright and secure a return by premium and ground rents as buildings extended, instead of depending on development taxes. But where an existing town had been allowed to grow up in a haphazard way with vested interests in the surroundings, the acquisition of land would of necessity be of a much more expensive and difficult character owing to delays in litigation and the rise in prices of land. It is in such cases that control would be preferable to acquisition, which indeed for financial reasons would, on a large scale, be impossible. The object of the suggestions made was to render it possible to control future urban development and to provide for the expansion of population without imposing increasing burden on the general revenues or the resources of local bodies such as were usually involved when urban land could be acquired only under the Land Acquisition Act.

14. Active interest in town planning became evident in the Provinces and States from about this time. Two of the leading town planners in England, Prof. Sir Patrick Geddes and Mr. H. V. Lanchester, were invited to visit India and advise their clients. The reports of these experts vary from the mere statement of a few of the local problems (for which no solution was suggested) to the submission of detailed schemes, plans and estimates according to the experts' terms of employment and length of stay in the province or State concerned. Some of the provinces, like the United Provinces, employed full-time consulting architects (a reference has been made to the Master Plan prepared by Mr. Lishman, Consulting Architect to the Government of the United Provinces in Appendix XVIII).

15. Prof. Sir Patrick Geddes and Mr. H. V. Lanchester, jointly and severally, advised, amongst others, the Provinces of Madras and the Central Provinces and Berar, and the States of Baroda, Gwalior and Indore. The Bombay University, in 1921, established a School of Sociology and offered its first Professorship to Prof. Sir Patrick Geddes.

16. By far the most interesting report, however, is that prepared by Mr. E. P. Richards, a noted English town planner, at the request of the Calcutta Improvement Trust. A separate reference has been made to it in Appendix XVII.

17. Since 1921, interest in the subject has steadily declined, except in the States of Hyderabad, Mysore and Baroda, and the Punjab in British India.

18. Three aspects of this initial progress and decline are striking ; these refer to the measures adopted by the Government of India and the States of Hyderabad and Mysore. The interest taken by the Government of India from time to time was an " occasional burst of insight " and not sustained, and so was the response. The initiative for the town planning movement was taken by the Government " from the top " instead of its coming " from below", as in the case of England (Appendix A of Appendix I) where the lead for reform in town and country planning was given by the public, the P. E. P. (Political and Economic Planning), the Town Planning Institute and the Royal Institute of British Architects. The Government accepted the lead and followed it up with necessary enquiries and legislation. In contrast, the Central and Provincial Governments in India have not taken adequate steps even to implement the recommendations made by the Holland Commission in 1918 (Appendix XX) on the scientific and technical aspects of town planning and by the Whitley Commission in 1930 (Appendix XIV) on town planning legislation. As a rule, the provincial Governments have not shown any active interest in the subject until recently when post-war problems came to the fore. In these circumstances, the decline was inevitable in British India.

19. The progress seen in Hyderabad, Mysore and Baroda can be traced to different reasons. The Government interest in these States has been sustained, though the means adopted to achieve the results have been different. Hyderabad and Baroda States sent scholars to study the theory and practice of the subject in England under town planning experts for a period of several years. These studies were not confined to flying visits of senior officials. The students on return to the State were given opportunities of training in order to study local conditions first and later they were given responsible positions as town planners. They received all the assistance they needed by way of necessary and adequate co-operation from the Public Health and other Government departments. The initiative, and later encouragement, on the part of the State, was thus assured.

20. In Mysore, on the other hand, the interest has been more " personal " than official, thanks to the initiative taken by the Ruler and the former Dewan, Sir Mirza Ismail. State students have not been encouraged by scholarships or by facilities provided by the Mysore University through the engineering college. Foreign experts have advised, from time to time, the State Officials on town planning, particularly with respect to Mysore and Bangalore, but the presence of these experts in the State does not seem to have benefitted so far the Mysore engineers or the rural areas to any extent. There is thus the danger of this type of town planning deteriorating to the level of the present British Indian standards as soon as the experts leave the State. While the Mysore type of planning may be more spectacular, the Hyderabad type is more permanent.

3. TOWN PLANNING EDUCATION.

21. The lack of general education in town-planning through lessons on environment, health and hygiene in schools, of popular education promote

by a technical society of town-planners or by municipalities and trusts, if only for reasons of enlightened self-interest, and of technical education through engineering colleges or architectural schools, is primarily responsible for the conditions obtaining in the country at present. General and popular education is no less important than the technical education. Without general education, public opinion, strong enough to influence the standards of municipal and improvement trust administration, can neither be expected nor created.

22. Post-war education would need a civic as well as an industrial bias for creating a balanced community.

23. The view held by some of our administrators that " The general principles of town planning are now fairly understood and it should be possible for the Town Planning Committee (of a municipality) to apply them in individual cases " (Appendix XIV) is not supported by English administrators.

24. Sir Gwilym Gibbon, C.B., C.B.E., D.Sc., Ex-Director of the Local Government Division of the Ministry of Health, England, a distinguished Civil Servant for half a century, in his book, " No. 2—Problems of Town and Country Planning " says :

> " The need for research in town and country planning is at least as great as in any other field. The planner of today is much in the same position as the medical practitioner of some generations ago. His practice is largely empirical, with occasional bursts of insight. The body social is not less complex than the body physical and certainly not less difficult to understand."

25. If the above would apply to England, it would certainly apply with much greater force to Indian conditions. Research in housing and town planning forms an important part of the programme of the International Housing and Town Planning Congress as indicated in the appendices attached to Appendix I. The technical body for the promotion of town planning suggested in paragraph 28 should pay special attention to research.

26. There are no Degree or Diploma courses in town planning in the country. The subject is not taught in any of the engineering colleges. Ordinary facilities in the shape of technical books in college and university libraries are not available to students wishing to study the subject on their own. No enquiries for trained personnel are received by the principals of engineering colleges from Government departments, municipalities or improvement trusts.

27. Few of the public works, municipal or trust engineers, have the time or the opportunity to follow the town planning movement even in its literature, much less to know it, at first hand, from the success or blunders of other cities. But even accepting what can be done at a distance or even from a brief visit of an expert or advising officer, the real danger remains not that of streets, etc.—absurdly wrong perhaps—but of the low standard of the mass of civic and municipal art. From the confused growth of our past, we tend to be easily contented with any improvements ; this, however, will not long satisfy us, still less will it satisfy the next generation.

28. The benefit derived by the Hyderabad State by sending abroad students for town planning education and training has been indicated in Section 2 of the report and in Appendix XIX (on Town Planning & Indian States). The Government of India have a scheme under consideration to send students for training to Europe and America as a part of Post-War Planning. Some of these scholarships, commensurate with the importance of the subject, should

be earmarked for town planning. The Central Government should, as early as possible, call a conference of persons connected with the administration, science, practice and education of town planning, with the object of promoting the early establishment of town-planning courses in Universities and Architectural Schools and of creating a body, analogous to the Road Congress, to watch the interests of the Science of town planning in all its aspects.

4. LEGISLATION.

30. The first reaction of several administrators, officers and public men to the suggestion that more energetic efforts are needed for slum clearance is that the existing legislative powers are inadequate and that in the existing conditions slum clearance and rehousing are beyond the financial capacity of local self-government administrations and of town planning and town improvement agencies.

31. All town-planning, town improvement and improvement trust legislation in India enacted after 1919 provides for :—

(*a*) the determination of the amount of compensation to be awarded for the land acquired on the basis of the *market value on the date of publication* of the notification for acquisition under Sec. 6 of the Land Acquisition Act, 1894 ;

(*b*) the market value of the land to be the market value *according to the use* to which the land was put at the date with reference to which the market value is to be determined ;

(*c*) powers to disregard increased value of land and buildings if it is specially high by reason of the use thereof in a manner which could be restrained by any court, or is contrary to law or public policy or is detrimental to the health of the inmates of the building or to the public health (Madras Town Planning Act, 1920) ;

(*d*) ampler powers by adding a separate schedule to the different acts, giving powers for further modifications in the Land Acquisition Act, 1894, which among others provide for privileges mentioned in (*a*), (*b*) and (*c*) above, and

(*e*) the recovery of betterment contribution from owners of properties improved by a trust scheme.

32. It is not possible to accept the suggestion that these powers are not ample, at any rate, to make a beginning. On the other hand, it is suggested by some of those who have carefully studied the Acts that these powers are far in advance of similar powers in English legislation at present. It is not within the scope of this report to examine in detail, the merits of the two extreme views ; the truth lies nearer the latter than the former. In the Punjab and in the Hyderabad State where full use is made of the existing powers, there is no complaint about the lack of powers. The Punjab claims that the existing legislation " gives reasonably wide planning powers ". The Hyderabad State planning authorities are satisfied that they have " practically all the powers needed for regional, town and village planning ". The actual working of the existing powers is, therefore, of greater importance for the purpose of this enquiry.

33. In the course of the enquiry it was disclosed that many of the officers responsible for the administration of the trusts or for tendering advice as valuers were not even aware of the nature of the existing powers. In no case were these powers being fully used, although they have existed for nearly a quarter of a century in some provinces.

34. Although legislation enacted prior to 1919 did not contain these special powers, there is nothing to show that any attempts have been made, either by the Bengal Government to seek these powers for the Calcutta Improvement Trust (1911), or by the Bombay Government to revise the now completely out-of-date Town Planning Act of 1915. A complete case for a Supplementary Act for town planning was made for Calcutta, as early as 1914 by Mr. E. P. Richards, at the request of the Chairman and Trustees for the Improvement of Calcutta (Appendix XVII) but no action seems to have been taken to implement the recommendations made in the report. What can be achieved even through the limited powers under the Bombay Act is, however, illustrated by the example of the Hubli Municipality (Appendix XIII). The municipal borough of Hubli, in the Bombay Presidency, was superseded by Government on the 5th January 1939 and it was handed over to a newly elected body on the 1st July 1944. The work done by the Executive Officer during the period of supersession of four and a half years (of which nearly four years are covered by the War) can be seen from the answers (Appendices VII & VIII) supplied to the questionnaires I and II.

35. It would thus appear that the trouble does not lie so much with the lack of powers as with the lack of the use of the existing powers, or lack of the desire to change them even when change has been recommended.

36. Housing legislation which mainly deals with subsidies for poor class housing is in a different category. No serious attempt has been made so far in India to deal with the housing problem either through state, municipal, cooperative or private agencies. The results of the cooperative housing movement in the provinces of Bombay and Madras have not been very encouraging. It is hoped that this question will no doubt receive simultaneous attention and further town and village planning legislation will include also housing legislation on the lines of the English precedent.

5. FINANCE.

37. Slum clearance and housing of the poor (who are not capable of paying an economic rent for the minimum accommodation they require for themselves and their families), involve financial considerations. It has been stated by most administrators that finance is the crux of the question and that slum clearance and housing have been held up for want of adequate State aid. According to the Chief Commissioner of Delhi, " The Government of India have proceeded on the principle that the Delhi Improvement Trust Schemes, in the aggregate, must be financially self-supporting. " Timely action in preventing the creation of slums would no doubt be more economical in the long run. The loss in preventible deaths, in ill-health, suffering and consequent inefficiency cannot be measured in terms of money as also that from fatigue and lack of leisure with its consequent effect on the cultural activities of the people. The losses in man-hours in unnecessary travel to and from work through traffic jams in large cities have now come to be assessed fairly accurately.

38. All the above factors will have to be taken into consideration before the Government decide to continue their policy to ask the slum clearing and housing authorities to make their schemes self-supporting. Towns with their slums are man-made. The responsibility for creating and continuing them has to be shared by the Government, the industries and the public. If Local Self-Governments have failed, the Government's share in that failure due to errors of omission and commission cannot be entirely disowned. Benefits of industry are shared by the Government through taxation. It is an

admitted fact that most of the slums are a direct result of unplanned and uncontrolled industrial development. The unsuspecting and ignorant villager is drawn to the towns by the lure of employment and thus adds to the slum population.

39. Hospitals, T.B. sanitoria and preventive measures against smallpox, plague and other infectious diseases are not expected to be financially self-supporting. High personages connected with Government administration make frequent appeals for funds, and in fact secure them, for what are considered as deserving causes. These appeals, and philanthropists who readily respond to them, are rightly blessed by the community. But the root cause of all the disease and squalor, the slums, is allowed to multiply without Government accepting adequate responsibility for financing remedial and preventive measures.

40. All the benefits that free and compulsory education can bring to the child that is born and bred and later lives and dies in the slums would be of doubtful value. The effects of environs on the mind of the growing child are too well known to need emphasis. Any amount of education, however well-planned and costly, during the years six and fourteen, cannot compensate for the permanent harm done by environs. These tend to keep the individual " as mean as the street he lives in ". This will have to be considered by the Government in apportioning the available finance between slum clearance and housing on the one hand and other nation building activities on the other. The responsibility for financing slum clearance and housing has been recognised by English legislation and accepted in practice. Beyond the rent-paying capacity of the worker, the financial responsibility for housing is apportioned between municipal taxation and Government subsidy. After their taxable capacity has been ascertained, Indian municipalities should be made to bear their full share in slum clearance schemes. Having done this, the Government would have to make their own contribution for making up the deficits.

41. At present the general practice is to allow *nazool* receipts to be set aside for town improvements. Legislation in order to reduce financial burdens to the minimum is necessary, where it does not exist, on the lines suggested in the preceding section. " But in addition to legislation, it is essential that there shall be a definite and progressive policy and, as a necessary corollary, funds to implement it " as has rightly been pointed out in the preface to the Report on the Re-organization of Urban Administration in the Central Provinces (1943).

6. ADMINISTRATION.

42. Town planning is a social science in its purpose while its considerations of efficiency and costs are economic. In the matter of physical planning both engineering and architectural problems come in. The objective is shaped and given the authority of the community and then administered through legislation and the governmental machinery which is broadly described as administration.

43. The efficient administration of such a complex phase of the community life of the people must necessarily be equally complex.

44. Judging from the present conditions in the country, dealing with this particular aspect of administration as revealed in the provinces dealt with in the appendices, the Governments appeared to be satisfied to " hold the ring to enable a multitude of rival individuals to advance their own interests and thus, by a beneficent alchemy, to promote the interests of civilisation ".

Where results are to be obtained through the working of the Local Self-Government institutions, Governments will have to recognise the ineffectiveness of the passive supervisory, or at best exhortatory, role which the parent departments are at present used to assume. This will have to give place to a bold policy of forecasting, coordination and following up.

45. The Government of India, by setting up an elaborate machinery for post-war planning, have come to recognize that there is no peculiar " democratic " virtue in incompetent administration. Town planning should receive the right " priority " in the broadest sense. What is more, the public needs to be educated in formulating opinion on these priorities. Administrative organisations and methods will have to be adjusted to ensure the fullest and most rapid effect.

46. Financial and accountancy considerations which dominate at present, and the belief that administration is merely a regulatory, policing and taxing mechanism, will have to give place to the conception of Government as the nation's common instrument for ensuring the welfare of the community.

47. In the early stages of the development of town planning in England, the question as to which parent department should " bring up the baby " was settled by the traditional hit and miss method. First, the Ministry of Health and later the Ministry of Works were tried. But finally, a separate Ministry for Town and Country Planning has been established. It is not necessary that we, in India, need repeat the experiment. We might as well study the results of the experiment and avoid the now discarded intermediate steps by creating separate Ministries in the Provinces and establishing a corresponding organization at the Centre to provide the necessary coordination, expert advice and stimulus.

48. Issues and problems should be solved in proportion to their national importance ; when there is lack of coordination, they are solved rather in proportion to the strength of inividual departments. The only method of securing action on a neglected subject, in the present conditions, is to create a new Ministry. Failing this, the neglect is bound to continue notwithstanding the best intentions.

49. If the Government of India take effective measures without any delay, both in respect of the short term and long term recommendations made in this report, it should be possible to synchronise the adjustment of the right relationship between the people, their work and their place with the raising of the standard of living through the National planning on a comprehensive scale.

50. The permanent civil servant cannot be blamed for the consequences where the advice tendered by him is not accepted by the Minister. But he will have to bear a fair share of the responsibility if his opinions and the technique for obtaining the information and for shaping and representing the policy prove ill-advised too often. It is here that he should share his responsibility with properly trained technical advisers. Given the knowledge and the will to do it, he is in a position to adopt, and alter where necessary, the techniques which the individual Minister is not in a position to do.

7. VILLAGE PLANNING.

51. The problem of the unearned increment accruing to the owner of the land near towns and industrial areas owing to urban development vitally affects village and country planning. Freedom to use such land for any

purpose without control of any kind either by the State or the local authorities further tends to promote usage of vacant land in a manner detrimental to the community.

52. A reference has been made to the Barlow Report on the distribution of the industrial population in the next section. Two other reports published in England of equal importance are the reports of the expert committee on Compensation and Betterment under the Chairmanship of Justice Uthwatt and the other of the committee on Land Utilisation in Rural Areas under the chairmanship of Lord Scott. Brief notes on these reports are at Appendices XXI and XXII.

53. The object of village planning can best be described in the terms that were referred to the Scott Committee for report. They are :—

> " To consider the conditions which should govern building and other constructional development in country areas consistent with the maintenance of agriculture, and in particular the factors affecting the location of industry, having regard to economic operation, part time and seasonal employment, the well-being of rural communities and the preservation of rural amenities. "

54. Lord Scott and his committee rightly understood the direction to mean that the conditions to be imposed on constructional development in the countryside must be such as will be consistent with the maintenance of a *prosperous* and *progressive* agriculture, and that pre-war prevalence of malnutritional diseases must never again be allowed to recur.

55. In the course of the enquiry, the Scott Committee became convinced that there is an innate love of nature deeply implanted in the heart of man and that the " drift from the land " has been occasioned in large measure by economic inequalities between town and country rather than by any deep love of supposed urban joys. They agree with the views stated by Mr. G. M. Trevelyan : " Today most of us are banished to the cities not without deleterious effects on imagination, inspiration and creative power. But some still live in the country, and some still come out on holidays to the country to drink in with the zest of a thirsty man the delights of natural beauty and return to the town re-invigorated in soul. " In this natural desire to seek escape from the town back to nature and to the villages, preservation of the existing natural amenities of the countryside plays a very important part. It is quite distinct from the provision of amenities like a pure water supply, drainage, medical aid, markets and communications.

56. The technique of planning for villages is not different from that for towns. It has, however, to be modified according to the needs, characteristics, customs and standards of living. It is in this sphere that the knowledge of local conditions, customs and habits plays a very important part.

57. The location of the market place in relation to the village, of the manure pits, the cattle shed and grain-store in relation to the home are some of the problems that need special study and tactful handling. The principle of " neighbourhood units " adopted in the town can be worked into a village setting plan to enable one unit to serve several villages.

58. The house plan has to be adopted to the customs of the people and to the needs of the cottage industry existing in or suited to the community. Weavers, goldsmiths, ironsmiths, carpenters, washermen and petty shopkeepers have all their special needs ; a weaver needs large room or a covered verandah for his loom while an ironsmith or silversmith requires a well ventilated work room.

59. Town and village planning thus complement and are complemented by each other.

60. At present even less attention is being paid in the country to village planning than to town planning. The Government of India circulars to the Provinces and States in 1912 dealt only with town planning. Added emphasis on village planning is of a comparatively recent origin even in the Western countries which have advanced considerably in town planning. In England the necessary attention is being paid to this aspect only after the commencement of the present war.

61. Road planning and large scale electrification and irrigation projects would certainly help rural areas, but if planning principles are not simultaneously applied to the villages as well as to the towns at this juncture, there is a danger of more ultimate harm than good being done to the rural population. Multiplication of roads without adequate legislative provision against Ribbon development would prove disastrous. Even Ribbon development legislation might fail to produce the necessary results due to unsatisfactory dual control (*vide* para. 67 of the next section).

62. Colonisation schemes for the returned soldiers and for the educated unemployed are being planned and executed in the Hyderabad State. These and similar schemes for special groups could well form a marked feature of our future village planning.

63. Hydro-electric, irrigation and water supply schemes create problems of a different kind. Impounding reservoirs submerge existing villages and new areas brought under irrigation require new village sites. Temporary sites occupied by labour brought for the construction of dams, head works, and canals show a tendency to become permanent.

64. The Revenue Departments, Public Works Departments or the parent departments responsible for the major schemes have not so far paid much attention for planning for the rural areas and populations affected by their schemes. This kind of planning needs more goodwill, professional advice and coordination than money.

8. THE LOCATION OF INDUSTRY.

65. The Office of the Economic Adviser to the Government of India has recently prepared a Memorandum on " The Location of Industry in India ". This Memorandum has two appendices ; one is a summary of the majority report of the Royal Commission on the Distribution of the Industrial Population of Great Britain, and the other is a summary of the report prepared by the P. E. P. (Political and Economic Planning) on the same subject. The two appendices are relevant to this enquiry. Similar summaries of the two reports could have been produced in this report as appendices, but to avoid repetition, a reference to the Memorandum and appendices is invited.

66. There is, however, one important feature of the Royal Commission Report which needs emphasis. The Memorandum refers only to the majority report of the Royal Commission and not to the minority report. The minority report is signed by three Commissioners—Prof. Patrick Abercrombie, Mr. Herbert H. Elvin and Mrs. Harmoine Hichens. Prof. Abercrombie has, in addition, added a Dissentient Memorandum on " Planning in relation to the Location of Industry ". While the Royal Commission unanimously accepted certain conclusions on the completion of the enquiry the recommendations in the majority report, in the opinion of Prof. Patrick Abercrombie and his

other two colleagues, do not go far enough. Town planners would probably agree with Prof. Abercrombie for reasons given by him in his Dissentient Memorandum.

67. The P. E. P. Report deals more fully with the relationship between the location of Industry and Town and Country Planning and this has a vital bearing on this enquiry. The Report had suggested the establishment of an Industrial Development Commission and in this connection it says :—

"It has been pointed out already that the proposed Industrial Development Commission would not override in any way the zoning provisions and town and country planning schemes. The relationship between town and country planning and the control of Industrial location must, however, be rather more fully discussed, as considerable confusion exists over it, Parliament itself recently, through the Restriction of Ribbon Development Act, 1935, created serious fresh difficulties (wherever major roads are concerned) by requiring two different sets of authorities, working under different Acts and different Ministries, to deal with the same development proposals from much the same standpoint, but with different methods. It is clearly desirable both that this particular duplication should be corrected and that any fresh machinery brought into existence should provide for the smoothest possible cooperation and the clearest possible division of field between town and country planning and related activities.

"The basis for separating the functions is clear enough. Town and Country Planning is essentially control of the use of the land. In any particular area it has to reconcile the claims of industrial, residential, and other uses in such a way as to secure the best pattern of development, taking into account both economy and amenities. It is vital to town and country planning that new industry of any type should not be permitted in the middle of a residential zone, but it is usually irrelavent to the town planner whether a proposed new industrial building is to be used for repairing motor cars or for manufacturing cigarettes. On the other hand, it is of no importance for the national guidance of location of industry whether a new factory at Coventry is in the middle of the town or on the east side or on the west ; the main consideration from this angle is what the factory is going to make, and whether it ought to be in the Coventry area at all.

"There is no reason therefore to fear that the jurisdiction of an Industrial Development Commission would either duplicate or overlap with town and country planning, the Commission would simply fill what town planners have long recognised as an embarrassing gap, and the existence of such a body with a clear, long-range policy and mechanism for the guidance of industrial development nationally and regionally would be of great assistance to them, even in existing conditions" (pages 257 and 258 of the P. E. P. Report on the Location of Industry in Great Britain, March 1939).

68. The Government of India should no doubt take steps for controlling and directing the location of industries. Elaborate planning through the Planning and Development Department is already proceeding. At the same time action to promote Town and Village Planning with special reference to zoning provisions and to ensure coordination between the economic and physical aspects of the location of industry on the lines suggested by the P. E. P. in the preceding paragraph is equally urgent and important.

9. HOUSING.

69. Housing today is a study of human relationship in a balanced community. Reconditioning of houses also means reconditioning in every way the lives of their inhabitants. Sociologically, its greatest value is to be noticed in those areas which have not yet quite lost the halo of respectability but which, without outside help, are bound to lose it in the course of a few years. Its scope is certainly not restricted to the provision of a few colonies meant for the middle class population outside the towns like Bombay, Madras and Ahmedabad.

70. The present war has affected housing in many ways as it did during the last one. For the duration of the war, construction, except for war requirements, is restricted and controlled. The housing statistics in 1918 showed that, in that year, the total value of houses approved for construction by English local authorities was only 4% of that of 1913. In European countries there was similar fall in construction for residential purposes. In thirty five German towns, the number of new constructions fell during the period, from 45,000 to 1,172 ; in Vienna from 13,000 to 36. Towards the end of the last war, the housing industry in belligerent countries came almost to a standstill.

71. Indian housing has probably been so far affected in the present war as European housing was during the last war. Further deterioration in the situation is almost certain. Experience of the last war showed that the conditions further deteriorated after the armistice. The crisis was actually reached, in Europe, sometime between 1922 and 1923.

72. The return of the soldier with a new outlook on life, the reluctance of the agricultural worker to return to his pre-war job and the rapid changes in the joint family system which might necessitate millions of new households without any increase in the population are some of the problems that materially affect the supply of residential accommodation.

73. Rapid industrialisation after the war would be an additional strain at a time when, as the experience of the last war showed, the pressure on the housing accommodation would be at its worst.

74. No attempt is made in this report to describe the existing housing conditions in the rural, the urban and industrial areas. More detailed surveys are being made by the Health Survey and Development Committee through their special sub-committees and by the Labour Investigation Committee appointed by the Labour Department of the Government of India.

75. The Whitley Commission have described the conditions of industrial housing, in 1930, in the following terms :—

" Neglect of sanitation is often evidenced by heaps of rotting garbage and pools of sewage, whilst the absence of latrines enhances the general pollution of air and soil. Houses, many without plinths, windows and adequate ventilation, usually consist of a single small room, the only opening being a door way often too low to enter without stooping. In order to secure some privacy, old kerosene tins and gunny bags are used to form screens which further restrict the entrance of light and air. In dwellings such as these, human beings are born, sleep and eat, live and die". (Extract from chapter XV, pages 271-272, of the Whitley Commission Report).

76. Since 1930, the conditions appear to have steadily worsened. War work in industrial towns has no doubt contributed considerably to this worsening process. It is feared that it would worsen further, if judged by the experience of the last war.

77. The Whitley Commission held the view that the important causes contributing to the unsatisfactory situation were the lack of coordination between the employers, the local authorities and the Government, and the apparent doubt as to where the responsibility for the situation should lie. These causes still exist.

78. Stricter enforcement of municipal regulations would no doubt considerably improve environmental conditions. But these measures alone cannot reduce overcrowding, which is no less a health problem than lack of water supply and drainage.

79. There is no housing legislation in India. The English practice is to combine housing legislation with Town and Country Planning Legislation and it should be tried in India. Unless housing legislation with the provision for adequate State-aid is introduced in the Provinces and Indian States, no material improvement in the housing conditions can be expected.

80. State aid according to the English practice has been in the proportion of twice the financial aid the local bodies are asked to make to subsidise poor class housing. Help through tax exemptions is more common on the continent of Europe and in the U.S.A. In Belgium, for instance, all buildings built since 1928, the rateable value of which did not exceed a certain figure, are exempt for ten years from land tax. In the U. S. A., a ten year tax exemption was calculated to amount to a relief to the extent of 1/3 of the cost of the building.

81. The first effects of direct state subsidies in England were striking, but so became its later abuse. The relief did not normally reach the section of the community that needed it most. In the course of this enquiry also similar abuse was noticed in a case where State aided housing is being promoted. Aid, as given at present in England, generally takes the form of rent rebates to individual tenants, based on their capacity to pay and the area they occupy.

82. Cheap credit facilities and guarantees can alone enable local bodies to undertake housing responsibilities on a large scale. Cooperative Buildings Societies have failed to show satisfactory results in the Bombay Presidency. State-aided housing has also been tried in the Bombay but only on a very small scale, in the suburbs of Bombay.

83. The Government should follow a bold policy, and encourage Building Societies, promoting home-ownership and individual thrift, to be formed and registered. These provide a safe and easy way of saving, and an advantageous way of borrowing, for the economic classes able to meet their housing obligations. Insurance Companies would then interest themselves in helping the building societies in covering certain risks on the lives of the borrowing members.

84. Charitable Building Trusts for the benefits of the less fortunate members of the community are common amongst Parsees, Jains and Khojas in Bombay. These correspond to the Housing Societies in England. The Government and the local authorities should encourage such Trusts in every possible manner. Enquiries show that these trusts have so far received no help, let alone encouragement.

85. The housing of the villager in his village, as also in the town where he migrates as an industrial labourer, presents a special problem.

86. This type of labour is only casual to the town while it has its deep roots in the village. The habits of this type of worker should be made more hygienic but there is no reason why he should be denied the " atmosphere " of his native village even when he is working for industry. He is more " at home " in a bustee than in a chawl. He loves his front and back courtyard and would like to own his milch cattle if conditions permit. In effect he tries to reproduce his village conditions if he is given the opportunity. He can build his own hut with the kind of material which he has handled in the village. He yearns for his village chowpal (meeting place) and fondly remembers the pleasant nights he spent in bhajan, kirtan or folksongs with his village companions. He tries hard to remain unsophisticated, wedded to his rural culture.

87. Land is plentiful in India. With proper distribution of industry and control on land usage, it should be possible to keep down land values. If properly planned, India may never need to develop vertically for her residential requirements needed for the villager migrating to the town. It is cheaper to the state and to the local bodies to provide for the housing of this kind of worker. Attempts have been made on these lines in Jamshedpur, Madras and Nagpur with varying degrees of success. The experience of the working of over a quarter of a century is available and should be useful if carefully analysed.

88. The land intended for these " urban villages " should be levelled, laid with roads and drained. Water supply through public hydrants and sanitary conveniences are to be provided only at certain points. Community centres, shops, schools and other public buildings are to be the only permanent buildings in these areas. For the rest, the vacant land should be divided into plots of suitable and varying sizes and leased out to the workers on well-considered terms. Conditions of transfer should ensure that the lease rights are not acquired by the local ' bania ' in settlement of a debt. Standard plans of buildings should be supplied. Building material should be made available at the site through municipal or Government agency. The bulk of construction can then be left to the worker, but if he needs help, it can be supplied, like the material, at cost. If the worker so desires, the entire construction can be undertaken on his behalf, the payments being made by the worker in easy instalments. In such a scheme, the urge to own one's own house would be strong. If the worker is a temporary resident and only wants accommodation on a rental, it should be possible to provide it for him in municipal or state-owned buildings on some of the sites.

89. These buildings would be only of a semi-permanent nature, made from locally available material. Consequently they would be comparatively cheap. More than cheapness, they would have an important advantage which a permanent building does not possess. With the steep rise in the standard of living, which is the main object of our National planning, the popular ideas about housing requirements would change rapidly. The next generation would probably not care to live in the houses which the present one considers suitable and convenient. A semi-permanent building can more easily be discarded in such circumstances than a permanent one. May be, the next generation would like to have, and could afford, a water connection and a water-closet inside the house and the municipality can, by then, extend its services to meet the demand which it cannot possibly do at present.

90. Starting with the urban village, these methods can be extended by the District authorities to the rural areas, where the initiative can be left in an increasing measure to the villager who has more abiding interest in his home.

10. WAR-TIME BUILDINGS.

91. Hundreds of crores of rupees must have been spent on buildings constructed for War needs. Some of them would probably be required for the future peace time needs of the Defence Department; according to the normal practice, those not required would be sold by public auction after the war. This matter would affect town planning in several ways.

92. Many of the buildings in urban areas have been located on sites which formed the lungs of the areas or were intended for some other permanent use. The pace at which these buildings were planned and constructed left no time for well-thought-out plans and substantial construction. Also for want of the required building materials like steel and cement, buildings of semi-permanent type had to be erected and unseasoned local timber had to be substituted for the usual seasoned Burmah teak.

93. With all these disadvantages, it should be possible to save to the country crores of rupees, if the problem of disposing of the wartime buildings is systematically solved.

94. It has been suggested that a large number of these buildings have been constructed on behalf of His Majesty's Government who might insist upon the structures, when not required, being sold by auction to ensure the best scrap value in the open market. If so, it is for the Government of India to examine the possible disadvantages of such a policy and convey to His Majesty's Government their considered views.

95. In urban areas, where this type of construction has been on the largest scale, land values have risen considerably. Inflation and the tendency on the part of the investing public to go in for land, at a time when the Japanese danger on our eastern boundary was considered real, have both further tended to raise values of vacant land to absurdly high levels. Those who have bought lands at such high prices have not been able to derive any benefit out of the present demand for housing due to non-availability of building material or State control on what little is available. Their only hope therefore lies in waiting for the material to become cheap so that it may compensate for the high cost of the land and thus level up the total investment on the completed building.

96. After the War, it is not likely that prices of new building material will reach prewar levels, at any rate, for some considerable time. The only alternative for the speculative builders, therefore will lie in the second-hand material likely to be released from semi-permanent war structures. There is thus a real danger of a scramble for indiscriminate jerry building with the help of such material in the urban areas. This may lead to the creation of more slums unless the Government takes suitable precautions to prevent it.

97. Municipalities, Improvement Trusts and Government departments can, however, make use of the material available from the war structures for their poor class housing schemes. Such schemes, if properly planned and located, would ensure to the State the financial benefit which would otherwise go to the land speculator to the detriment of architectural propriety and building standards.

98. The scope or utilization of war structures in rural areas is much larger. Some of the areas laid with roads, services and electricity can well form the nuclei for locating new or dispersed industries. These serviced localities can also be used for sitting satellite towns, market places or villages depending on their size and situation. The material from dismantled buildings can be utilized by district municipalities or authorities on the same lines as those suggested for the urban areas. Longer use could be made of suitable buildings as they stand or with the necessary alterations because in rural areas there would not be the same urgency or need for clearing the sites as might be the case in congested towns.

99. The problem, though vast, is so important that it should be handled satisfactorily on the lines indicated above by a special technical section of the department for handling the work of the disposal of War contracts and War materials.

11. A SUMMARY OF RECOMMENDATIONS.

100. A summary of the recommendations made in the body of the report has been arranged in this section in two categories, one short term and the other long term. The first paragraphs (A) under each heading deals with the recommendations that can be given immediate effect, while those in the second (B) indicate the lines on which the long term policy of the Government should be based.

EDUCATION.

101 (A). (*a*) A small conference of persons of officials and non-officials connected with the administration, technique, practice, education of town planning and Local Self-Government should be convened by the Government of India. The conference should be asked to report on :

(*i*) the introduction of town planning courses in the existing Architectural schools and Engineering colleges ;

(*ii*) the scope and length of the courses ;

(*iii*) the method of practical training ;

(*iv*) the centre or centres where such courses can be immediately introduced, having regard to the existing standard of technical knowledge, experience, and other facilities available to train students ;

(*v*) the best means of obtaining and making available in the country technical advice for immediate and short term requirements ;

(*vi*) such other matters as the Government of India may desire to refer.

(*b*) A body, analogous to the Road Congress, should be constituted to promote the science, technique, education and research in town planning.

(*c*) Institutions like the Gokhale School of Economics in Poona, which are carrying on civic surveys, should be encouraged financially and students should be sent to such institutions for training.

(*d*) Scholarships for studying town planning outside India, and " Guest " professorships should be instituted.

102 (B). (*a*) General education in all its stages, from the primary to the college stage should be given a civic bias.

(*b*) Creation of a strong civic sense in the public should form an important feature of the policy of the Government, municipalities, technical institutions, and scientific bodies, through publicity, exhibitions and museums.

(*c*) Chairs for sociology should be established in the Universities.

(*d*) Where such chairs exist, students should be encouraged to take up civic surveys, likely to be helpful to town planning, for their post-graduate work and thesis.

(*e*) Designs for important layouts and public buildings in the country should be obtained by open competitions, the selection being left to a panel of judges drawn from all parts of India.

LEGISLATION.

103 (A). (*a*) Full use should be made of existing legislation, while its defects, if any, must be carefully examined with the help of technical advisers.

(*b*) Obsolete Legislative Acts should be revised and brought up-to-date.

(*c*) Town planning, town improvement, and prevention of ribbon development legislation should be enacted where it does not exist.

(*d*) In drafting legislation, advice of town planners should be made available to the administrators and legislators.

(*e*) Improvement Trusts should be established where necessary, in areas which are allowed by the municipalities to deteriorate. But the creation of trusts must be preceded by comprehensive surveys, definite programmes and the fixation of suitable town planning and housing standards.

(*f*) Until a sufficient number of town planners of a suitable type to advise the individual provinces on important matters of legislation are available in the country, the Central Government should make available technical advice for those provinces and States that ask for it.

104 (B). (*a*) Housing legislation should be considered an immediate post-war problem of high priority.

(*b*) An expert committee of the Legislative Department of the Government of India should examine the provisions of the Land Acquisition Act of 1894 in the light of the present town planning needs; and amendments to the Act should be suitably made, instead of a multiplicity of piecemeal amendments to the town planning and town improvement Acts of the provinces concerned.

FINANCE.

105 (A). Slum clearance schemes cannot be expected to be financially self-supporting. The financial responsiblity for these projects should be shared between the Government, the municipalities and the industries that benefit by the large congregation of populations in towns, on an equitable basis.

106 (B). Housing finance, like housing legislation, is an immediate post-war problem of high priority.

ADMINISTRATION.

107 (A). (*a*) At the Centre, a Town Planning Officer with a suitable designation and status, should be appointed to ensure the co-ordination between departments, to tender advice and to provide stimulus.

(*b*) Departments for Town and Village Planning should be created in the Provinces under a Minister.

(c) In the Provinces, the Ministers and the Administrators should be advised by a Provincial Town Planner who should have the status of a Chief Engineer of the Public Works Department.

(d) The Government control and direction of the Local Self-Government machinery should be more effective.

(e) There should be no hesitation, on purely civic grounds, in either mending or ending municipal inefficiency, obstruction and other objectionable features.

(f) In superseded municipalities, local officers should be directed to make out definite programmes to be carried out within specified periods.

(g) Model building bye-laws for local bodies should be drafted and circulated. Local bodies should be required to adopt and enforce them.

(h) Inter-departmental co-operation and co-ordination, either through a liaison Officer or any other machinery, is essential for the success of town planning schemes.

108 (B). (a) Corporation, Municipal and District Board legislation should be examined and revised where necessary to bring it in line with recognized and up-to-date town planning principles and practice.

(b) It should be made obligatory on municipalities notified by Govt. to have executive officers with statutory powers.

VILLAGE PLANNING.

109(A). (a) Problems of " unearned increments " in land values, and " marginal " development should be effectively controlled by stricter measures of preventive and directive planning.

(b) Co-ordination between Town Planning, Revenue, Agriculture and Industries Departments is vital. This co-ordination can best be effected through the Town Planning Department for the purpose of siting of new industries or the dispersal of existing ones.

(c) Ribbon development should be strictly controlled by one single authority.

(d) Inequalities between rural and urban amenities should be minimised.

(e) Existing rural amenities should be preserved.

(f) The layout of market places in relation to a group of smaller villages, as " neighbourhood units ", new sites for villages submerged by hydro-electric projects or for new communities, and colonising virgin countryside brought under cultivation by irrigation projects have to be planned well ahead.

110(B). (a) Provinces should, through their experienced revenue officials or expert committees, examine the powers necessary to regulate the conversion of agricultural into building land in, or in the vicinity of, large towns. Land Revenue Acts will have to be revised substantially to co-ordinate the land revenue policy, village planning and the location of industry.

LOCATION OF INDUSTRY.

111. Location of industry is governed by economic, social and strategic considerations. The town planner is best suited to advise on the sociological aspects of this important problem. His services should be freely utilised in deciding the broad policy, on a national and regional basis; while the siting of individual industrial areas and factories should be the responsibility of the Town Planning Department.

HOUSING.

112(A). (*a*) The recommendations contained in the Holland and Whitley Commission reports, as far as they refer to steps that can be implemented in a short term policy, should be given immediate effect.

(*b*) Cooperative and building societies and philanthropic building trusts should be encouraged by the Government and local bodies.

(*c*) Credit facilities should be given to cooperative societies on a liberal scale.

(*d*) 'Company' towns, like Jamshedpur and Batanagar, should be encouraged.

(*e*) Vertical development for housing should be avoided as far as possible.

(*f*) The best that is in village culture should be preserved even while providing for the housing of the villager employed in industry, as suggested in paragraph 86 of the report.

(*g*) Cheaper type of housing, both in the urban and rural areas, should be encouraged on the lines suggested in paragraphs 88 and 108 in the report.

113(B). (*a*) The recommendations contained in the Holland and Whitley Commission reports on housing and allied matters should be fully implemented.

(*b*) Recommendation made in this report under Legislation and Finance [paragraphs 104 (B) (*a*) and 106 (B)] may be seen.

WAR-TIME BUILDINGS.

114. A special technical section, under the Department for the Disposal of War Contracts and War Materials, should be created to deal with this question, on the lines suggested in the report (paragraph 99).

JAMSHEDPUR :
Dated 24-1-45.

B. R. KAGAL.

APPENDIX 25.

Functions of the Central and Provincial Water and Drainage Boards.

(a) The Central Water and Drainage Board.

The functions of the Board may broadly cover the following aspects of water and drainage problems:—

1. To lay down general principles to be adopted in respect of:—

(*a*) investigation and preparation of water and drainage schemes in the provinces, including the minimum technical details to be gathered during such investigations;

(*b*) the order of priority in the investigation and execution of such works;

(*c*) the sources to be considered for water supplies;

(*d*) types of distribution systems to be adopted;

(*e*) nature and frequency of examinations for the control of quality of water supplied for public consumption, including the standards of quality to be maintained in water supplies of varying magnitude;

(*f*) standards to be aimed at in the maintenance of water works urban and rural, as regards mechanical equipment and plant control;

(*g*) the training and licensing of water operators; and

(*h*) plant control laboratories, including their equipment a staff.

2. To act as an nformation bureau for the supply of information regarding the latest developments in respect of water and drainage problems to provincial authorities and others interested in water and drainage problems.

3. To advise on the conservation of water and its distribution on an inter-provincial basis.

4. To advise on inter-provincial river pollution problems.

5. To promote research into special problems such as the presence of fluorides in water and the treatment of industrial waste.

6. To investigate sewage disposal and excreta disposal methods in so far as they affect the development of water supplies.

7. To recommend to the Central Government the sanctioning of grants from Central funds for water and drainage works in the provinces.

(b) The Provincial Water and Drainage Boards.

The functions of a Provincial Board will be mainly those enumerated above for the Central Board in so far as they apply to the province concerned. While the former will be independent of the Central Board, it is to be expected that the general principles laid down by the Central Board in regard to the development of water and drainage schemes will be followed in the provinces, as far as local circumstances permit, and that there will, in consequence, be a reasonable measure of co-ordination of provincia effort in these fields.

The Provincial Boards will be responsible for the active promotion of a planned development of water and drainage projects in their respective areas. The Central Board will perform the same functions in the Centrally Administered Areas.

APPENDIX 26.

A note regarding the action taken in the Province of Madras to improve the administration of local bodies.

The action taken in the Province of Madras to control the administration of local bodies in order to increase their efficiency may be considered under two heads, namely, (1) the period before the Public Health Act was enacted in 1939 and (2) the subsequent period. For both periods the administrative and legislative measures taken towards the attainment of the purpose in view will be considered together in this note.

Before the enactment of the Madras Public Health Act.

During this period the legal measures taken relate to the three Local Self-government Acts, the Madras City Municipal Act, the Madras District Municipalities Act and the Madras Local Boards Act, which regulate the administration of local bodies in municipalities and in non-municipal areas. These Acts were passed in 1920 a short time before the Reforms brought into being by the Government of India Act of 1919, came into operation in 1921.

(*a*) *Provincialisation of Health Officers.*—During the official years 1921-22 and 1922-23 the Provincial Government introduced a scheme of district health organisation for the rural areas in five districts and in the subsequent year extended it practically all over the Province. A District Health Officer with a Health (or Sanitary) Inspector under him for each taluk was appointed to work under the President of the District Board and the whole expenditure was met from provincial revenues. At that time a few of the larger municipalities had Health officers who were appointed by the municipal councils concerned as members of their establishment. In 1924 the Municipal Health Officers were also provincialised by the Government of Madras.

Under the Local Self-government Acts the right of appointing health officers had been vested in the local body concerned but the fact that Government bore the whole expenditure in respect of the district health organisation and three-fourths of the cost for municipal health officers helped to prevent opposition for the time being from the local bodies to this assumption of power by Government. A few years later, however, one municipal council decided to exercise its legal right to appoint its health officer although this decision entailed the forfeiture of the usual grant given by Government. To meet this situation the Provincial Government acquired in 1933 the statutory power to appoint health officers employed by municipal and non-municipal local authorities through suitable amendments to the respective sections in the Madras District Municipalities Act and the Madras Local Boards Act.

(*b*) In exercise of the rule-making powers conferred on the Provincial Government by certain section of the two Self-government Acts, Cholera Prevention and Control Rules were made for municipal and non-municipal areas by the Government of Madras in 1932. Under these rules the recommendations of Health Officer for additional staff and equipment during the prevalence of the disease or in the event of a threatened outbreak of it must be met by the local authority, any difference of opinion between the two being referred to the Director of Public Health for final decision.

(*c*) In regard to vaccination against smallpox all the three Acts provide that it shall be compulsory in rural and municipal areas " in respect of such persons and to such extent as may be prescribed ". Taking advantage of this power and accepting that ' vaccination ' includes revaccination, the Provincial

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Government made, through the statutory rules which it framed, revaccination compulsory for all people living in rural and municipal areas at intervals of 10 years.

(*d*) Under the rule-making powers the Provincial Government prescribed from time to time the qualifications of the various classes of health staff that will be employed by local authorities.

(*e*) In order to improve the general administration of municipalities Government acquired power, in 1933, to appoint Commissioners by a suitable amendment of the District Municipalities Act. It was also provided that, when a Commissioner was appointed, he would replace the Chairman as the " Executive authority " of the municipality.

It must not be supposed that the appointment of Commissioners has so curtailed the powers of municipalities as to constitute a threat to local self-government. The Commissioner has only very limited powers as regards the incurring of expenditure without the sanction of the Municipal Council, but control over the municipal staff and routine administration have been transferred to him. The Chairman continues to convene the meetings of the Municipal Council and to preside over them. He is by virtue of his office a member of every Committee of the Council. Lastly it is obligatory on the Provincial Government to transfer the Commissioner if the Council passes, at a special meeting convened for the purpose, a resolution asking for such removal by a two-thirds majority vote.

It will be seen that, even before the Madras Public Health Act was passed the Provincial Government had taken action on fairly extensive lines to control local bodies in the fields of general and health administration.

Before the Public Health Act of 1939 the Director of Public Health had no statutory power to advise local authorities in respect of health matters while the health officers serving under Municipal Councils and District Boards had only advisory functions. The Public Health Act changed this position. The relevant sections are given in an appendix to this note. It will be seen from Section 6(1) that the powers of the Provincial Government for controlling local authorities are extensive and that Sub-section (2) of this Section enables the Government to transfer these powers to the Director of Public Health and the members of his staff. Under section 7 the Director of Public Health has the power to recommend for adoption by any local authority such measures as he may consider necessary for improving the public health administration in the local area or for safeguarding the public health therein and any difference of opinion that may arise owing to financial or other reasons will be referred to Government for final decision. Under section 13 the Director of Public Health has been given certain powers over the public health establishments maintained by local bodies.

Under Section 14 the health officer can exercise supervision and control over all the other members of the public health establishment of local bodies, although appointments, transfers and punishment are subject to the approval of the executive authority, which is in the case of a municipality the Commissioner and of a District Board, the President of the Board. In either case final decision rests with the Provincial Government.

Section 16 transfers the functions and the duties of the executive authority in respect of various provisions relating to health in a number of Acts to the health officer. Thus he is no longer merely an adviser. In matters such as prosecutions for the enforcement of law, he can act independently of the President of the District Board who is likely to be subject to local pressure.

Rules regarding notifiable infectious diseases which have been framed under the Madras Public Health Act and revised rules under the Municipal and Local Boards Acts in respect of cholera have strengthened the hands of the health officer for taking prompt and energetic action. The existing administrative and legal position has been succinctly stated by the Director of Public Health and his words are quoted below :—

" The Madras Public Health Act confers powers on Government to appoint special Health Officers in the areas affected by or threatened with epidemics ; the Director of Public Health also possesses powers in connection with prevention and control of epidemics ; in addition to giving general directions to local bodies on the above subject, he may assign to any local area the public health personnel from other areas. Health Officers have powers under the Public Health Act to appoint additional staffs, concentrate in an area members of the staff from other places in their jurisdiction, purchase medicines and equipment, carry out disinfection measures, etc. The last of these powers is conferred on Health Inspectors also. When the Collector of the District notifies an area to be affected by or threatened with an epidemic of any of the notified diseases, of which cholera is one, the Health Officer gets additional powers, viz., control of movements of population and goods, disinfection, closure of markets, enforcement of inoculations and vaccinations and other kindred measures. It may also be stated in this connection that rules to supplement these measures have been framed in several instances by Government and these rules have the force of law."

AN EXTRACT FROM THE MADRAS PUBLIC HEALTH ACT, 1939.

POWERS OF THE GOVERNMENT AND OF THE DIRECTOR OF PUBLIC HEALTH.

6. *Powers of the Government and of the Director of Public Health and his staff.*—(1) The Government shall have power to inspect, control and superintend the operations of local authorities under this Act.

(2) The Government may from time to time, define the powers to be exercised, and the duties to be performed, by the Director of Public Health or any member of his staff for the purposes of sub-section (1).

(3) Nothing contained in sub-sections (1) and (2) shall be deemed to effect, or derogate from, any powers possessed by the Government or the District Collector under any other law for the time being in force.

6-A. *Power of Government to direct performance by district board of any function devolving on panchayats.*—(1) The Government may, by notification direct that in respect of any function to be performed by a local authority under this Act and specified in the notification, the district board and not the panchayat shall be the local authority in all or any areas in the district which are comprised within the jurisdiction of a panchayat.

(2) Where a direction is issued under sub-section (1) in respect of any function, the Government may, by general or special order —

(*a*) determine, or provide for the determination of, the expenses incurred by the district board in performing such function in the area or areas comprised within the jurisdiction of any panchayat or panchayats, and

(*b*) apportion, or provide for the apportionment of, such expenses between the district board and the panchayat or panchayats concerned.

7. *Powers of the Director of Public Health to advise local authorities.*—The Director of Public Health may, from time to time as occasion requires, recommend for adoption, by any local authority, such measures as may be necessary for improving the public health administration in the local area, or for safeguarding the public health there in ;

Provided that if on account of financial or other reasons, any local authority is unable to carry out such measures, or if there is any difference of opinion between the local authority and the Director, the matter shall be referred to the Government whose decision shall be final.

PUBLIC HEALTH ESTABLISHMENTS OF LOCAL AUTHORITIES.

8. *Public Health staff in local areas.*—(1) The public health establishment of every local authority (other than the Corporation of Madras) shall be on such scale as the Government may from time to time direct.

(2) The authorities who may make appointments to the public health establishments referred to in sub-section (1), the conditions of service of the members of such establishments, and the duties of such members shall, notwithstanding anything contained in the Madras District Municipalities Act, 1920, or the Madras Local Boards Act, 1920 be governed by regulations not inconsistent with this Act, made by the Government. Such regulations may lay down the extent to which the Director of Public Health shall have disciplinary control over the members of such public health establishments. (*Madras Act V of 1920. Madras Act XIV of 1920.*)

9. *Appointment of the Health Officer.*—(1) A local authority shall if so required by the Government include the post of a Health Officer in the establishment schedule.

(2) Notwithstanding anything contained in the Madras District Municipalities Act, 1920, or the Madras Local Boards Act, 1920, the Government—(*Madras Act V of 1920. Madras Act XIV of 1920.*)

(*a*) shall appoint the Health Officers of all the local authorities (other than the Corporation of Madras) in respect whereof a direction is issued under sub-section (1), and

(*b*) may recover from each such local authority, the whole or such proportion of the salary and allowances paid to the Health Officer, and such contribution towards his leave allowances, pension and provident fund as the Government may, by general or special order, determine.

10. *Appointment of temporary Health Officers in emergencies.*—(1) In the event of the prevalence or threatened outbreak of any infectious disease in any local area, or of any unusual mortality therein, the Government may, by order, appoint temporarily for such period as may be specified therein, one or more Additional Health officers, for the treatment of such infectious disease and preventing it from spreading, or for investigating the cause of and preventing, such mortality, as the case may be.

(2) For the purpose of sub-section (1) the Government may, appoint any medical practitioner registered under the Madras Medical Registration Act, 1914, either on an honorary basis or on such salary or allowances or both, as the Government may fix. The salary and allowances shall be payable from the funds of the local authority. (*Madras Act IV of 1920.*)

11. *Delegation of powers of Health Officer.*—The Government may, by general or special order, authorise any officer of the Government or of a local

authority, to exercise such of the powers of a Health Officer under this Act in such area, and subject to such restrictions, limitations and conditions and to such control and revision, as may be specified in such order.

12. *Appointment of persons to carry out the provisions of this Act.*— (1) Notwithstanding anything contained in this Act or in any other Act or Acts governing the local authority or authorities concerned, the Government may, by general or special order, appoint any person or persons to carry out such provisions of this Act, and in such areas as may be specified in the order.

(2) The expenses incurred by such person or persons in doing so shall be met from the funds of the local authority or authorities concerned, either wholly or in part, and, where more than one local authority is concerned, in such proportions, as may be determined by the Government.

13. *Powers of Director of Public Health over public health staff of local authorities.*—(1) Subject to such rules as may be prescribed, including rules for consultation with the executive authorities concerned, the Director of Public Health shall have power :—

(*a*) to transfer any member of the public health establishment of a local authority to the public health establishment of another local authority; and

(*b*) in times of emergency, to assign one or more members of the public health establishment of one local authority for temporary duty in the area of another local authority.

(2) Nothing contained in clause (*a*) of sub-section (1) shall apply to the Corporation of Madras.

(3) In the case referred to in clause (*b*) of sub-section (1) the local authority within whose jurisdiction the member or members of the public health establishment of another local authority are working, shall pay for the period of such temporary duty, the salary and allowances of such member or members and such contribution towards their leave allowances, pension and provident fund as the Governemt may, by general or special order, determine.

14. *Health Officer's control over public health staff.*—(1) The Health Officer in charge of any local area shall exercise supervision and control over all other members of the public health establishment in such area.

(2) (*a*) Save as otherwise provided in this Chapter or in any rules or regulations made under it, all appointments, transfers and punishments of the members of the public health establishment under the supervision and control of the Health Officer shall be made by the Health Officer, subject to the approval of the executive authority.

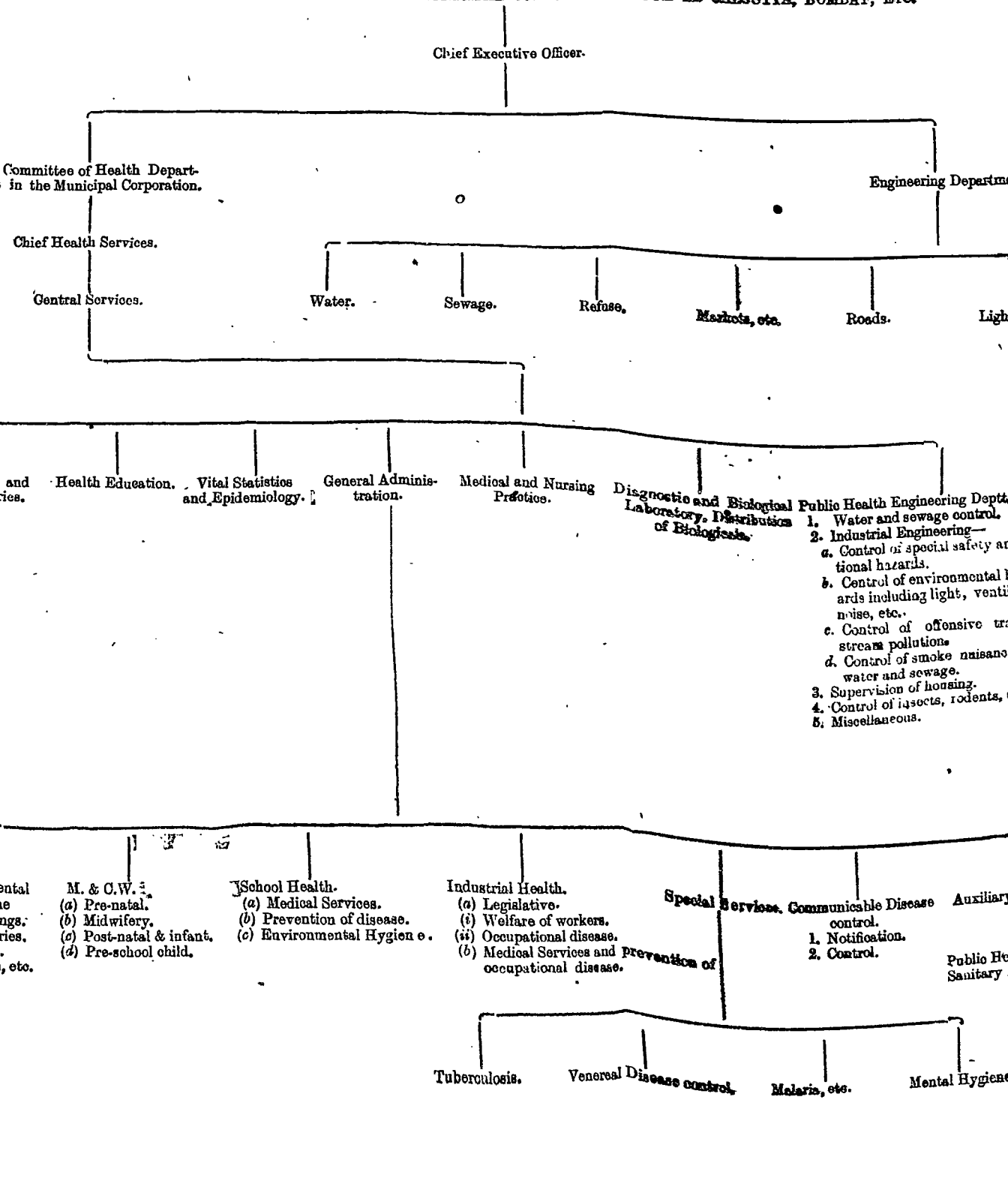
(*b*) If for any reason the executive authority disagrees with the orders of the Health Officer under clause (*a*), the executive authority shall refer the matter to the Government whose decision shall be final.

15. *Local authority to provide adequate facilities to the Health Officer.*— Every local authority shall provide its Health Officer with such clerical assistance, office accommodation, furniture, equipment, stationery, and forms as may in the opinion of the Director of Public Health be necessary for the proper conduct of the business of such Health Officer.

16. *Authorisation of Health Officer to perform the functions of the executive authority in public health matters.*—Notwithstanding anything contained in the Madras City Municipal Act, 1919, the Madras District Municipalities Act, 1920, the Madras Local Boards Act, 1920, the Madras Prevention of Adulteration Act, 1918, and the Places of Public Resort Act, 1888, the Health Officer of a local authority shall perform such of the functions, and discharge such of the duties, of its executive authority in regard to public health matters under any of the provisions applicable to such local authority contained in the Acts aforesaid, subject to such appeal and control as the Government may, by general or special order, determine. (*Madras Act IV of 1919. Madras Act V of 1920. Madras Act XIV of 1920. Madras Act III of 1918. Madras Act II of 1888.*)

APPENDIX 27

MODERN HEALTH ADMINISTRATION FOR A MUNICIPAL CORPORATION SUCH AS CALCUTTA, BOMBAY, ETC.



APPENDIX 28.

Memorandum on the training of " The Basic Doctor " and some problems relating to medical education.

PART I.

I.—Educational Principles.

The aim of medical education is to produce a body of medical men, capable of maximum service to the community. In most communities the doctor has been looked upon as an educated man whose opinion on problems other than those of medical interest carry a certain weight. The members of the medical profession, more than those of any other learned profession, come into contact with all types and grades of persons, from the most cultured to the unlettered and from those occupying the highest position in life to the commoner who with difficulty earns his daily wages. If he is to maintain that position which he has held in the past, it is essential that the medical man should have a high standard of general education and a broad outlook, professionally and otherwise, beyond the limitations of an examination syllabus, however well planned that may be.

The medical course, whatever its duration, will not permit of a student being taught more than a certain amount. This is particularly true in the clinical years during which it is impossible to attempt to provide the student with anything like the knowledge which he will require in his future professional career. Organised post-graduate education is therefore essential. The main emphasis in under-graduate teaching must be on the inculcation of principles and methods to enable the student to learn for himself and think, observe and draw correct inferences. It serves no useful purpose to impart to him a large number of facts most of which may become out of date. Provided a student is taught correct methods, he will continue to learn for the rest of his life, but if methods have been inadequately or incorrectly presented to him, his education is apt to cease on qualification.

There is another fundamental consideration which has not in the past been given due prominence. From the first, medical education must be carried out against a background of original investigation and research. Throughout his career the student must be made to realise that science and medicine are always progressing and that it is the duty of every medical man to try and make his contribution of original observations and new ideas.

Undergraduate medical education has in the past been concerned perhaps too much with the curative aspect of medicine. Preventive medicine must now come to the forefront and the duty of the medical profession should be largely to prevent rather than to cure disease. The promotion of health, the prevention of illness and the treatment of disease should all be dealt with in the curriculum, but greater emphasis must be placed on the first of these than has been the case in the past.

II.—Sub-Divisions of Medical Education

These may be classified under the following progressive stages

(*a*) General education—at school or University.
(*b*) Preliminary scientific education.
(*c*) Pre-clinical scientific education.
(*d*) Clinical education.
(*e*) Medical Examinations.
(*f*) Internship as House Surgeon or Physician.

(*a*) & (*b*) General Education and Preliminary Scientific Education.

The standard of general education required at present for entrance to a college of medicine in Indian Universities is the Inter-science, an examination conducted either by Universities or in some provinces by special Boards. The Inter-science qualification, if taken in Physics, Chemistry and Natural science—the medical group—enables the candidate to proceed immediately to the study of the medical subjects of the curriculum. In a few Universities, candidates pass the Inter-science with at least Physics and Chemistry as optional subjects and then undergo further training in Physics, Chemistry and Natural science for a period ranging from 6 months to 9 months (or one academic year).

It is a debatable question (a) whether the whole of the teaching of these fundamental sciences should be entrusted to Intermediate Colleges or (b) whether this instruction should also be given in Medical Colleges.

There are certain considerations which arise in this connection. These are :—

(1) Laboratory facilities at Intermediate Colleges in most Universities vary widely and the equipment of very few approaches the standards maintained in Medical Colleges.

(2) In many Universities a practical test is not held.

(3) The teaching of the subjects for the medical course should have a definite medical trend. This is difficult to ensure in Intermediate Colleges where future medical students are in a minority and the teachers are not in direct touch with medical needs. In Medical Colleges, the whole teaching is, or should be, directed to the medical students' requirements.

(4) The existence of these departments in a medical college and the close association of the professors with the pre-clinical and clinical professors are advantages from the point of view both of teaching and of research.

Three alternatives would therefore seem possible :

1. To allow students who pass the Inter-science in the medical group to join the medical course proper.

2. To let Inter-science candidates take a special course in the Preliminary sciences, ranging from 6 to 9 months, and then join the medical course proper.

3. To let these subjects be taught with the necessary vocational bias together with the pre-clinical sciences, *i.e.*, (1) Applied Physics with Physiology (2) Biology with Anatomy and Physiology. (3) Organic and Physical Chemistry with Biochemistry.

Good arguments for and against these alternatives may be advanced.

Summary of Recommendations on Pre-medical Education.

(*a*) That the general education to be required from medical students should be improved ;

(*b*) That it is desirable that two years should be spent after the matriculation during which period the student should be taught the subjects of Physics, Chemistry (inorganic and organic) and Biology, besides English and the Elements of Statistics ;

(*c*) That the training should be such as to bring out the vocational bias as it relates to medical science ;

(*d*) That there should be an examination which includes a practical test ; the course and the test should be planned by a joint Committee of the Faculties of Science and Medicine ;

(*e*) That such training should be given by experienced senior teachers who have had opportunities of studying the requirements of the medical curriculum ;

(*f*) That with this end in view, detailed syllabi should be prepared in the different subjects, and

(*g*) If these requirements cannot be complied with, the student should after passing the Inter-science be given a special course of instruction for a period of six months, at the end of which he should be examined in these subjects by a written and a practical test.

(*c*) Pre-clinical Scientific Education.

The subjects of study at this period are :—

(1) Anatomy including Embryology.

(2) Physiology including Experimental Physiology and Bio-chemistry.

(3) Pharmacology.

(4) Elementary courses in Psychology and some of the clinical laboratory sciences.

(5) General Pathology and Micro-Biology.

These courses cover a period of two academic years (or six terms at present).

There has been some criticism in regard to the training given to medical students in these subjects. The main points objected to are :—

(1) Too much detail is taught and is expected from the student, so that he becomes lost in a forest of detail and does not achieve a sound knowledge of fundamentals.

(2) The practical application of these subjects to his later studies is not brought home to the student.

(3) The transition from pre-clinical to clinical studies is too abrupt.

(4) The student in his clinical period of training does not have Applied Anatomy and Applied Physiology taught by his pre-clinical professors.

Anatomy.—The facts which medical students are required to remember should be reduced to a minimum. Anatomy, it has been stated, should be taught from the point of view of evolution and in relation to function, so as to give the student a concept of the structure of the body as a whole. Every student should dissect the whole body once but, having seen all the necessary details of structure, he should not be expected to memorise more than is necessary. Anatomical detail which is required for special surgical purposes should be stressed later during the clinical period, and memorised in conjunction with its practical surgical application. The department of Anatomy should be organised in the closest association with the teaching hospital and should be readily accessible to clinical students for reference concerning anatomical problems arising in their work.

Supply of bodies for dissection.—There is considerable apprehension among teachers of Anatomy regarding a possible insufficiency in the supply of bodies for the teaching of Anatomy and Operative Surgery. This is a matter which requires careful consideration by the authorities concerned.

Physiology.—This should take up the greater part of the time of the student in the Pre-clinical period. It would be well if Bio-chemistry were taught as one continuous subject by a chemist with a medical qualification who understands the relationship between Chemistry, Physiology and medicine and also if Bio-physics and Applied physics were taught with particular reference to the study of Physiology.

Histology is taught in some colleges in the department of Anatomy and in others in the department of Physiology. This is a matter best left to the decision of the Universities concerned.

Pharmacology.—This subject may be divided into two parts : one part to be taught in conjunction with Physiology and the other in conjunction with clinical medicine. The first part includes those drugs with a known and demonstrable physiological action on experimental animals. The second part comprises those drugs which have an action which is only understood by observing their effect on patients or which are used as chemotherapeutic agents in the treatment of disease.

In some colleges, Pharmacology is taught in the second year of the medical course, while in others it is taught in the third year after the candidate has passed in Physiology. If the subject can be taught in two stages, the first part should be included with Experimental Physiology, and the second part, Applied Pharmacology, with Therapeutics in the clinical period. The physician should work in close relation with the pharmacologist.

Psychology.—An elementary course is to be given in this subject so that the student's attention may be directed to the importance of the mind as well as the body. At a later stage this knowledge will be applied, in Psychiatry, to mental disorders. Coordination is required between Psychology, Psychiatry and Clinical Medicine.

Methods of clinical examination.—It is laid down in the existing regulation that elementary methods of clinical examination, including the interpretation of physical signs, the use of the stethoscope and opthalmoscope, and introduction to general Pathology and Bacteriology should be taught in the pre-clinical period. It has hitherto not been possible in most Universities to arrange for this teaching up to the required standard.

Number of students.—Opinion varies considerably as to the optimum number of students at an institution. Some would have it at 60 while others hold that it should ordinarily not exceed 80 and only in exceptional instances reach 100 students per annum. It is the number of students that should determine the size of a teaching hospital and not *vice versa*. Additional beds required for the population should be arranged for in non-teaching hospitals.

The possibility of some students sitting for the B. Sc. in Physiology or Anatomy and thus gaining a fundamental degree in these subjects should not be lost sight of.

Number of teachers required.—Modern educational methods demand a high ratio of teachers to students. It may be stated that the proportion of teachers to teach in the subjects of Anatomy and Physiology should not be less than 1 to 10, and of these teachers at least half should be full-time members of the regular staff—*i.e.*, not including demonstrators.

Besides these permanent teachers there should be part-time teachers, two for each of the departments of Anatomy and Physiology. These part-time teachers should be junior specialists attached to the surgical and medical units of the teaching hospital and they should give part of their time to teaching Anatomy and Physiology in their relation to the clinical subjects. There should be also a part-time radiologist attached, preferably with a diagnostic outfit at his disposal in the College.

The practice of employing, as part-time teachers in the pre-clinical subjects, men who at the same time hold part-time appointments of the 'Junior Specialist' or the 'Registrar' status in the hospital, has much to recommend it. Both clinical and pre-clinical work benefit from the liaison, and teachers themselves keep in touch with recent developments in the basic sciences. Such appointments, to be of maximum value, must give the holders reasonable opportunities for individual work, and should not be taken merely as a means of retaining a connection with the hospital or department. Appointments of this type should as a rule be held for a maximum period of three years.

Hospital visits during pre-clinical training.—Students undergoing training in Anatomy and Physiology should be required to visit the wards of a teaching hospital in small groups about once a fortnight during the second year. At these visits the part-time clinical teachers should demonstrate cases suitable for impressing the student with the value of a sound knowledge of Anatomy and Physiology and so stimulate his interest in those subjects. They should be shown cases of inflammation, fractures, hernia and similar conditions on the surgical side, while on the medical side cases of Jaundice Anaemia, Arrythmias of the heart, Hyperthyroidism, etc., will impress the student with the importance of Physiology. The examination of typical pathological fluids could also be done in order to stimulate the student's interest at an early stage in laboratory investigations.

Length of course.—At present the course extends over two academic years or six terms. Intermediate holidays badly interrupt proper teaching and the sustained interest that the student should take in his work. It should be possible to limit holidays, as is done during the clinical period of training.

Staff.—It is important that, if properly qualified members are to be recruited, the staff should be well paid and that there should be cadres established in the pre-clinical subjects. Demonstrators and clinicians may be part-time and may work their way up to become clinical specialists, but the senior members should devote their whole-time to teaching and research and should be adequately paid.

The importance of trained technicians in the departments engaged in pre-clinical education cannot be over emphasised.

Summary of recommendations on Pre-clinical subjects.

That the teaching of Anatomy requires revision in most Colleges and that the number of didactic lectures should be curtailed radically while the number of lecture demonstrations should be increased and preferably given to smaller classes;

That dissection should cover the whole human body and should be under better supervision and guidance;

That a considerable increase in the number of teachers is required if the subject is to be taught properly and within a shorter period than at present;

That the number of permanent senior staff, Professors, Additional Professors, Assistant Professors or Senior Demonstrators should be 1 : 30 or 40, while the Junior Demonstrators should be 1 : 10 students in the Department;

That a proportion of the Demonstrators should also be part-time clinical assistants in the hospital but these Demonstrators should work under the direction of the head of the Anatomy Department;

That alternatively, if possible, a full-time teacher may be appointed as an Associate or Assistant Professor who will be a teacher of Anatomy with clinical duties in the hospital ;

That it is desirable to have cadres established for the pre-clinical subjects which will provide life careers for those electing ;

That the teachers and part-time teachers should be adequately paid and that full-time Professors of Anatomy should be paid on much the same scale as the full-time Professors in Clinical subjects ;

That there should be close cooperation and collaboration between the teachers of the various pre-clinical subjects, and between the teachers of pre-clinical and clinical subjects and preventive medicine ;

That it is necessary that opportunities should be available for students in the pre-clinical subjects and preventive medicine to be shown cases in the wards, and that demonstrations should be given to impress the student with the value that knowledge of these subjects will have for him later in his career.

That, with a view to make the student realise the importance of evolution, a study of comparative anatomy is desirable ;

That radiological demonstrations should be given to the student and that a diagnostic set should be fitted in the department ;

That if the fundamental improvements suggested above are carried out, namely, increased facilities and increased number of teachers, etc., it should be possible to teach Anatomy in 600 to 700 hours which should include the teaching of embryology ;

That in general the principles stated above regarding the teaching of Anatomy apply also to the teaching of Physiology ;

That the teachers in Physiology may be pure physiologist or physiologists with medical qualifications, but the principal qualification should be in Physiology with research experience in that speciality ;

That in Physiology, as in Anatomy, it is desirable to associate with the staff clinicians of at least the status of a Registrar, and these should be full-time teachers ;

That the subject of Histology may be taught in either the Department of Physiology or that of Anatomy, but the importance of the functional aspect should be stressed in teaching this subject;

That Biochemistry may be taught in the Department of Physiology or may be established as a separate Department but the teaching of the subject to undergraduates should be undertaken in close cooperation with the Professor of Physiology ;

That applied Physiology should be taught in the clinical course either by a Professor of Physiology or by a Clinical Professor with special training in that subject ;

That the total number of hours devoted to the study of Physiology shall be 600 to 700 as in Anatomy, with 100 to 150 hours devoted to Biochemistry ;

That the Department of Physiology should be organised on a wider basis than merely the teaching of undergraduates, so that research and post-graduate teaching can form a fundamental part of the work of the Department ;

That it is desirable that special facilities should be made available for a medical student to qualify for a Degree in the pre-clinical subjects of Anatomy or Physiology ;

That a course of lectures in elementary Psychology and an introductory course of lectures in Pharmacology should be given towards the later half of pre-clinical training.

Clinical Education.

Length of Course.—This can best be decided by considering the length of time required to be devoted by the student to study and attendance at the different clinics. The facilities necessary for proper clinical training will be referred to in greater detail in a later chapter, but emphasis may at this stage be laid upon certain aspects of education which are not conducive to efficient training:

(*i*) Too many didactic lectures are being given in colleges, with little benefit to the student.

(*ii*) There is imperfect correlation in the teaching of Pathology, Bacteriology, Hygiene, Medicine and Surgery.

(*iii*) There is often repetition of the same theme, with possible divergences in methods of teaching and consequent waste of time and energy.

(*iv*) Clinical teaching is not considered as the prime duty of the staff in a teaching hospital, with the result that clinical teachers are overworked and have often neither the time nor the energy to devote even the necessary two hours a day to supervision of the students entrusted to their charge.

(*v*) The number of students posted under each clinical teacher is too large for effective personal attention and guidance.

(*vi*) The junior staff are not given the opportunities that they should have, to participate in clinical instruction; nor are they always selected with this object in view.

(*vii*) In some medical colleges students are still required to spend an undue proportion of time in watching major operations. For most students this time could be spent more profitably in acquiring, under supervision, practical experience in those surgical procedures that are likely to fall to the lot of the general practitioner.

(*viii*) There is little or no coordination, and less planning, in clinical instruction, among the different clinical teachers of a department (medicine, surgery or obstetrics and gynæcology), so that the student who passed from one clinical teacher to another, not infrequently is treated to a repetition of the same theme, with little variation.

(*ix*) The proper selection of cases suitable for under-graduate teaching and the availability of such cases at the proper time, are matters that are hardly ever taken cognisance of in admitting cases to a teaching hospital. Cases of primary importance for the general practitioner are usually not available, and not infrequently the wards are filled with rare and complicated cases, the study of which, interesting as it doubtless is to the specialist, is not suited to the under-graduate.

(*x*) Teaching in the out-patient department in many institutions is entirely wanting, while overcrowded, insanitary, noisy and bustled surroundings such as at present exist, can never afford the atmosphere for proper clinical teaching.

(*xi*) The students have now to go from hospital to hospital to attend the specialities, with the result that much precious time is lost, and energy wasted. The specialities themselves are often taught without the fundamental background of medicine and surgery.

Transition from Pre-clinical to clinical studies.—In considering pre-clinical studies it was stated that the transition will be facilitated—

(*a*) By the students in Anatomy and Physiology being taught some portions of the subjects by part-time clinical teachers and conducted in batches through the wards of a teaching hospital.

(*b*) By an introductory course of lecture demonstrations in Elementary Pathology, Bacteriology, etc.

(*c*) By a special course of preliminary instruction given at the beginning of the clinical course.

We will now consider the nature and periods of instruction required for the different subjects of the clinical curriculum. No student should enter on these courses before he has qualified in the Pre-clinical subjects of study.

Medicine.—The course of instruction in Medicine may consist of :—

A. (*i*) Three months' preliminary instruction which will be common to Medicine and Surgery.

(*ii*) Six months' in-patient clerking.

(*iii*) Three months' out-patient clerking, and

(*iv*) Lecture demonstrations.

B. Courses of instruction in the other subjects of the clinical course which should be spread over a period of three academic years.

A. (*i*) *Preliminary instruction.*—This course should essentially be one in Applied Anatomy and Physiology combined with detailed instruction as to how to conduct the routine examination of a patient and to record the findings. There should be no distinction between 'medical' cases and 'surgical' cases, though one or other of these may be selected with advantage for illustrating specific symptoms and signs of disease. The course should be conducted jointly by the Heads of the Departments of Medicine, Surgery and Pathology.

At each session the whole group meets to discuss the principles and receive instruction, and is then divided into small groups of not more than 10 students, preferably less, who examine illustrative patients under the guidance of a junior member of the staff or a demonstrator. The organisation necessary to conduct such a course is considerable and necessitates a filing system in which patients suitable and accessible are recorded, as well as a knowledge of the material available in the hospital. The full educative value of such courses will not be utilized if there be not a sufficient number of suitable cases in the hospital. This can be remedied if the Heads of the Departments can call on the Assistants and Registrars of all wards to cooperate.

After the first six or eight weeks of the course each student should be allotted a few patients in the wards for full examination and recording, the patients being both 'surgical' and 'medical'. Stress should be placed at this stage on the accuracy of observation and of recording, and on the part played by laboratory and instrumental methods in obtaining accuracy and in amplifying the clinical examination.

A. (*ii*) *In-patient clerking.*—The six months allotted to in-patient clerking in medical wards should be divided into two periods of three months each.

(*a*) The first period of three months should be taken as soon as convenient after the preliminary instruction period. The student, should during this period, examine and record fully as many cases of different types of ill-health

and disease as can be under supervision, and follow their progress. He should not be required to examine and record more cases than he can investigate thoroughly. There must be no hurried work and what he does must be checked and supervised. He should accompany the physician on ward rounds and report the cases allotted to him. It is helpful if, during this period, he attends the out-patient along with the unit on days when the unit is responsible for admissions, so that he can see the new cases that are to be admitted and follow up the cases which may attend the out-patient of the unit concerned after discharge.

(*b*) The second period of in-patient clerking should be taken during the final year under the care of the professor and his associates or assistants. The cases should be selected largely for their value for teaching purposes or research. The number of students under each clinical lecturer should not exceed ten and the lecturer should be responsible for the examination and recording of all new cases and should conduct the teaching. He will, however, hand the group over to any member of the teaching staff who is specially interested in the system under discussion, such as the neurologist or the endocrinologist. It is very necessary to see that one of the students should present the case to his fellows in the group.

A. (*iii*) *Outpatient clerking.*—It has already been stated that when a student is clerking in the wards he should attend if possible the out-patient sessions to which the patients from his ward return for follow-up or continuation of treatment.

In addition to this he should spend 3 months in the general medical out-patient department. He should not, however, take any part in a crowded out-patient department where the physician is forced to do hurried and incomplete examinations. Such an example is bad for the student and encourages him to take shortcuts and resort to clever guessing. Every new case should have a complete history and physical examination and be fully recorded, and the student should be asked to take only such new cases as he can investigate thoroughly. He should then present the case briefly to the physician, who checks the findings and decides on disposal and treatment.

To enable the out-patient departments of most general hospitals to be efficiently for teaching very drastic and far-reaching improvements are required. Hurried work, which is so bad an example to the beginner, is to be avoided.

A. (*iv*) *Lectures in medicine.*—At present students are given set lectures in the class room which are attended by them mostly for the sake of registering attendance. Too many theoritical lectures are given and not infrequently the time spent at these lectures could have been better spent at the bed-side in the wards.

In the Continental and American systems the University occupies a dominant position, the various departments being under the charge of a University Professor with a skilled full-time staff working under him. The professor instructs all the students in a particular subject and gives large-scale demonstrations at daily clinical lectures, accompanied by diagrams, specimens, etc. In Germany such departments under the control of professors are known as 'Kliniks'. Attached to each of these are lecture rooms laboratories, rooms for students, etc.

It would appear that the best results are secured by combining the two systems, the Continental and American system of clinical lecture-demonstrations to large classes with the bed-side clinics and clinical clerking so much in vogue. The lectures in subjects like Medicine and Surgery should be given with a view to explaining certain fundamentals of each group of diseases and to giving a connected view of applied Anatomy, applied Physiology and Pathology and chief methods of clinical investigation and diagnosis together with methods of treatment of disease of the different systems. The student should then be in a position to study for himself the details in a suitable text-book. No Professor of Medicine or Surgery can deal with every known disease, or even the majority of such diseases, and it is futile to give a theoretical discourse on many of the diseases which are not commonly met with. The majority of the lectures should be illustrated with clinical cases; pathological specimens, radiological films, charts, etc., and these lectures should be carefully planned and prepared.

Surgery.—The teaching in Surgery should be planned on the same lines as that of Medicine. After the three months preliminary training, students should spend 6 months in clerking and 3 months in the out-patient department.

Obstetrics and Gynaecology.—The Obstetrics department should form a wing of the main teaching hospital, or a separate hospital for women and children may be built in the same campus and used for teaching purposes. It must detract from the value of the teaching and be a great waste of time if the student has to spend much time in travelling between hospitals. For the student's sake it is essential to have, in the main centre or very close to it, a department of obstetrics sufficiently large for the teaching of students. A bed strength of 100 for obstetrics and 50 for gynaecology may suffice for an annual intake of 70 students or thereabouts.

The period of clinical work should be not less than six months, three months of which should be spent in the final year and at least one month of this period should be spent in residence. The Indian Medical Council, like the General Medical Council, insists on each student personally conducting 20 cases of labour and this procedure has led to incorrect certification in both countries. According to this rigid standard, a student may conduct 20 cases of normal labour either in hospitals or in domiciliary practice, and not have witnessed a single case of abnormal labour.

It is more valuable for the student to spend his time in a hospital where he can only get 10 or 15 cases and yet see a large number of abnormalities than to conduct 20 deliveries in a district or maternity home and see no abnormal deliveries. Domiciliary practice is invaluable as this gives the student an insight into social medicine, but it is neither necessary nor profitable for him to spend a disproportionate period of time in attendance on cases in the district.

Attendance at an antenatal and postnatal out-patient clinic, clerking in ante-natal wards, attendance at Gynæcological out-patient clinic and wards and the follow-up of the neonatal cases are of importance. The time devoted to obstetrics and gynæcology should be in the proportion 2 : 1.

There is a point of view frequently expressed that midwives and medical students should not be trained in the same hospital. There is naturally constant friction between the two as to who should take the case, but if a proper system of domiciliary conduct of cases be introduced for midwives to whom it is essential, and if a planned programme of case taking be arranged, there should be no room for complaint.

General practitioners who practice midwifery should have had post-graduate hospital experience. The average general practitioner does not want to do obstetrics, and if some form of group practice, as is envisaged, is evolved, it is likely that one man would do the whole of the obstetrical work of the group. Such a person should have obtained adequate post-graduate experience in obstetrics. The need for conducting 20 cases before graduation will probably be less in the future than hitherto, while more post-graduate work in obstetrics will be called for.

Pathology.—Pathology should be taught through all the years of the clinical period. This does not necessarily mean any increase in the time devoted to pathological teaching, but that it should be spaced so as to overlap with clinical instruction and not be relegated to a short period of intensive study.

There are two solutions to the question as to when an introductory course in Pathology should be given. i. That instruction in general Pathology and Bacteriology should be given before students enter the wards. ii. That instruction should begin co-incidentally with clinical studies.

It would appear that if students, during their pre-clinical studies, are familiarised with certain aspects of Pathology through conducted tours in the wards, the introductory course in Pathology would more profitably and suitably be given during the three months preliminary training at the commencement of clinical studies.

Included in the department, or associated with it, should be the four branches of Pathology *viz.*, Bacteriology, Clinical Pathology, Morbid Histology and Chemical Pathology. The primary function of a pathological department in a medical college is the acquisition and dissemination of knowledge. The Pathology department being the key department in under-graduate and post-graduate teaching and in research, the professors or senior members should not be saddled with a great deal of routine duties and administrative work. Their work should be limited to that connected with research, while all routine work connected with other hospitals in the city or province should be done by a separate staff, who will, however, have the benefit of consulting the professors of the department.

Correlation of the teaching of Medicine by pathologists and physicians.—This presents difficulties and is not practicable over the whole fields of Medicine and Surgery, but in certain selected cases such a combined method of teaching would be of value. In public health there is scope for a wider collaboration in the teaching in Bacteriology and Immunology. In some important groups of diseases the system of combined lectures by the staff in Medicine, Pathology, Bacteriology and Preventive Medicine would be of great benefit, as a complete picture would be presented and unnecessary repetition avoided.

Clinical Pathology.—Clinical Pathology is a development of what used to be called 'test room work'. There should be for each medical unit a ward laboratory attached, while in the surgical units two units may share a laboratory room. These should be located in close proximity to the wards concerned so as to facilitate the work of the students. Besides these ward laboratories there should be a central clinical laboratory for the whole hospital in charge of the professor or a senior assistant where pathological, bacteriological and bio-chemical investigations will be carried out. This central laboratory, and the ward laboratories, should be under the supervision of the professor who should be responsible for running them efficiently.

There are two aspects of clinical pathology *viz.*, (1)—the teaching of the existence of tests as applied to the sick patients and all that such tests imply, and (2) the actual technique of the tests. The students should be taught to perform the simpler types of laboratory tests which they will have to carry out as general practitioners, but the actual technique of the more complicated or rarer tests need not be emphasised unless the students are intending to specialise later.

Examination.—Opinion is divided as to whether Pathology should come into the final examination, but the general trend of opinion is that it should be as near to the end of the student's course as possible. The view is held that, while Pathology should be allowed to play a large part in the training and qualification of students, it should remain with experienced clinicians to say whether a man is suitable to practice. If scientists, such as pathologists, come into the final examination it would magnify the importance of their subject. It has therefore been suggested that the examination in pathology proper should be held 6 months to one academic year before the final test. It is not suggested that the final examination will not include questions in Pathology or the examination of pathological specimens or slides, but such examinations should be in the hands of clinicians.

Post-Mortems.—This most valuable method of teaching Pathology requires greater attention in most colleges. Difficulties are no doubt increasing, but with effort and zeal more advantage should be taken of the opportunities to ascertain the pathological conditions which actually were the causes of death, and students afforded all facilities to attend at convenient hours. The post-mortem room should be so constructed that it will have all the advantages of a clinical lecture theatre and a side room laboratory should be available for demonstration of details.

Public Health.—This subject is of fundamental importance, for the future of medicine lies in the prevention of diseases and not only in their cure. Although it is laid down by the medical council that "Throughout the whole period of study the attention of the student should be directed by his teachers (*a*) to the importance of the measures by which normal health may be assessed and maintained, and (*b*) to the principles and practice of the prevention of Disease", little has been achieved in this respect. Few colleges here or elsewhere have a planned method of approach to tackle the problem. The importance of social medicine is even now but imperfectly realised. The follow up of cases is defective, the enquiry into environment hygiene is perfunctory and the follow up in the home to study conditions there with a view to arriving at more satisfactory conclusions in regard to the influence of home conditions on the causation or the prevention of diseases is hardly ever attempted. Too much theoretical presentation of the subject is attempted and too

little regard paid to the practical and applied aspects of preventive medicine.

The extensive administrative duties connected with public health will devolve on those with post-graduate qualifications in the subject. The general practitioner, however, has to deal with individual and family hygiene and home surroundings and the student should therefore be given opportunities during his clinical studies to familiarise himself with such condition. It would be well if he could for some period be attached to a Health Centre and avail himself of the opportunities to study home conditions.

This subject must be taught in its scientific aspects together with Pathology in the third and probably in the fourth year, while the applied aspect will be taught throughout the clinical years, more particularly in the fourth and final years. Teachers of Hygiene should be members of the Public Health Department who are actively engaged in Public Health work or who were till recently so engaged. If officials in the Public Health Department are seconded to a teaching post, they should be so seconded for a maximum period not exceeding five years.

Special Departments.

The student is at present required to attend the special departments of—

1. Opthalmology.
2. Oto-Rhino-Laryngology.
3. Dermatology.
4. Venereology.
5. Psychiatry.
6. Infectious diseases
7. Tuberculosis.
8. Orthopaedics.
9. Anaesthetics.
10. Radiology.
11. Vaccination.
12. Pediatrics.

The multiplicity of the specialities has led to a grave problem in undergraduate medical education. In many colleges these departments are located in special hospitals far away from the teaching centre and students have thus to expend much time and energy in journeys between hospitals.

Specialisation has certain advantages. It provides for more exact diagnosis of difficult cases and is better for treatment. In an undergraduate school a reasonable compromise between too little specialisation and too much is always required.

It is essential however that special departments should be developed within the main teaching centre. This will allow the student to see a large variety of cases and it should be a principle that members of the staff should be allowed to teach on cases not under their immediate care. Each medical school hospital should therefore have as many of these departments as possible, with a number of beds for all the specialities together equal to the number for general medicine and surgery. These beds will make it possible for groups of cases to be seen by the students in a relatively short time.

There has been a tendency of recent years for many physicians and surgeons to take up new branches of medicine and surgery and practice them exclusively. Neurology, Cardiology, Diabetes, Diseases of the chest, Urogenital surgery, Thoracic surgery, Neuro-surgery, Orthopaedic surgery, Fractures and Traumatic surgery are outstanding examples. This practice is tending to the formation of new special departments and has created a major problem in undergraduate medical education.

When a man of unusual ability and originality appears, another member of the staff with similar interest should be encouraged to work with him and the necessary departments should be provided for them. The departments should be adapted to the men rather than the men to an existing department.

This insistence that special departments should be located in the main teaching centre does not imply that special hospitals are not required. On the other hand, the existence of such special hospitals is desirable from the point of view of the speciality concerned as well as for purposes of post-graduate teaching. The opportunity afforded for a number of specialists to meet and exchange views in a special hospital is of great advantage. If such special hospitals are located in the same compound or in very close proximity to the main teaching hospital they would serve the three-fold purpose of affording facilities for—

(*a*) Under-graduate teaching,

(*b*) Post-graduate teaching, and

(*c*) Opportunities for contact and consultation with the regular medical and surgical staff and other specialists.

A question of some importance is the place that these specialities shall hold in the examination of the undergraduate. Some of the specialities are now given prominence with a separate paper and viva-voce devoted to the speciality. Some share that honour with one or more specialities or find a place in the papers on medicine and surgery. In other cases it is open to the examiners to include a question on the speciality in the papers or clinicals in Medicine, or Surgery. The chief aim of the final test of the undergraduate should be to ascertain if he has a comprehensive view of the main subjects of Medicine, Surgery and Obstetrics and the inclusion of specialities, or even their possible inclusion, throws an extra strain on the student sometimes to the detriment of his general outlook. Two alternatives are thus available:

(1) That knowledge of the specialities should be tested at the final examination either in the written, clinical or oral.

(2) That the student should be required to pass an elementary examination in the speciality conducted by the teacher before proceeding to the final medical examination.

Ophthalmology.—It is essential that the student should be instructed in the diagnosis and treatment of injuries and the common disorders of the eye. He should be able to use the ophthalmoscope with sufficient skill to recognise the more important changes in the fundus due to general diseases. It should be possible to give this essential instruction in the ophthalmic department of a general teaching hospital in a three months' course, comprising clinical instruction and attendance at a course of lectures and demonstrations. In view of the importance of this subject, more particularly in

tropical countries, it would appear desirable that every student should be examined in ophthalmology before qualifying in medicine.

Oto-Rhino-Laryngology.—Training in this speciality should consist of instruction in the use of ordinary instruments and methods of examination so as to recognise the appearance of normal structures and to carry out simple tests of function. The period of clinical teaching should be three months, during which the student should attend the out-patient department, twice a week for two hours, and the wards or demonstrations once a week. A few systematic lectures may be given as a preliminary.

Dermatology.—There should be a department of Dermatology in every teaching hospital, which should consist of an out-patient department with adequate accommodation and a reasonable proportion of beds for the investigation and treatment of inpatients. Elementary instruction in the morphology, physiology and pathology of the skin should be given to students who should then attend a course of clinical instruction in the out-patient department and wards on one or two days during a period of 3 months.

Venereology.—Although this subject enters into the field of medicine, surgery, obstetrics and gynaecology and every other speciality, there is an advantage in the student attending a department of venereology, both out-patient and wards for special instruction in this subject.

Psychiatry.—This subject should be dealt with both in the preliminary course in the pre-clinical period and also in the clinical period. Apart from the special hospitals for mental diseases which obviously should be located at a distance, the main teaching centre should have an out-patient department and an observation ward for teaching purposes. A student should do three months clerking on psychiatric cases in the out-patient department with one attendance a week. A teacher should not handle more than 6 students at a clinic if students are to take an active part.

Infectious diseases.—At present the teaching of infectious diseases is very defective. The hospitals are poorly equipped and the staff in many cases are not selected from the point of view of teaching. The seasonal prevalence of certain infections makes it difficult for the student to study the different types with which he should be acquainted.

It has been suggested that a certain number of beds should be provided in every undergraduate teaching hospital both in the interests of patients and in the interests of teaching, so that a patient who develops an infectious fever while in a general hospital can continue his treatment in a fever ward of the same hospital without being transferred to a fever hospital. This can be done if the system of glass cabins in vogue in some continental clinics be introduced.

At present in this country cases of Typhoid and Puerperal fevers are treated in general hospitals and in wings of maternity hospitals although in Great Britain such cases are transferred to fever hospitals. There is now a changed outlook and it is realised that typhoid fever teaches a lesson in medical treatment and nursing technique almost unparalleled by any other disease.

If it is impracticable to implement these suggestions the only specialities that need be taught outside the teaching centre will be infectious diseases and mental diseases.

Orthopaedics.—The student should be introduced to the study of orthopaedic principles and practice immediately after passing the pre-clinical sciences, *i.e.*, during his first three months of preliminary instruction. At this stage with anatomical and physiological knowledge fresh in his mind he is well able to comprehend those principles which underlie the diagnosis and treatment of disabilities of the loco-motor system. The teaching should be given in the casualty out-patient department and in the orthopaedic ward.

The student should receive further clinical instruction in orthopaedics in the third and fourth years as a dresser. In the final year teaching should be provided in the orthopaedic out-patient clinics, and in fracture clinics, as part of the general out-patient teaching facilities. Seminars, ward classes and revision classes should also be arranged for small groups of senior students. It should be emphasised that an experienced clinical tutor is an essential member of the staff of all University orthopaedic teaching departments.

Radiology.

(A) *Pre-clinical years.*—Radiological demonstrations on anatomical and physiological subjects should be more widely introduced and demonstrations should be given by members of the radiological staff when feasible, in collaboration with teachers in Anatomy and Physiology. It has been pointed out that one member of the radiological department should be recognised as a part-time teacher of the pre-clinical subjects. As few radiological departments can offer the space for large class demonstrations, medical schools should be equipped with appropriate apparatus which could also be used for research purposes.

(B) *Clinical years.*—The object of instruction during this period is to teach student the diagnostic and therapeutic value of radiology.

(C) *Radio-Diagnosis.*—1. Demonstrations as to how diagnostic radiology may help the student in his practice.

2. The X-ray appearance of lesions commonly encountered in hospital or general practice.

3. The rationale of, and preparation for, various X-ray investigations.

(D) *Radio therapy.*—Undergraduates should be instructed in (*a*) Types of cases in which radio-therapy is of value, and its contra indications.

(*b*) The implications of radio-therapy so far as the patient is concerned, *i.e.*, length and severity of treatment and reactions observed.

(*c*) The results obtained and possible sequelae. It is not necessary for the undergraduate student to be taught details of radio-therapeutic technique.

A few formal lectures should be arranged in order to explain the principles of radiotherapy and the biological reactions involved. These should be given in the final year, but there should be throughout the clinical course a close cooperation of the medical and surgical staff with the Radiological Department.

Anaesthesia.—This is a much neglected department in most teaching institutions. Students should be taught by a fully qualified anaesthetist and must have opportunities for administering anaesthetics under supervision. The appointment of ' clerk to the anaesthetist ' should be held by every student during his surgical posting.

Pediatrics.—This subject as it concerns the older child should be taught in the children's department which every teaching hospital must have within its premises. The teaching of the physiology and pathology of neo-natal life should more properly be in the hands of a pediatrician in the obstetric wing of the hospital or in a separate maternity hospital in the compound. Special hospitals for children should be used for post-graduate teaching. Students should be posted for at least one month to the pediatric department when attached to the medical department.

Tuberculosis.—Every teaching hospital should maintain a tuberculosis dispensary and also a tuberculosis ward for the treatment of acute cases. Every student should be required to attend a three months' course consisting of out-patient attendances and 15 or 20 clinical demonstrations in the wards. These demonstrations and such lectures as are given in this department should form part of the general teaching of medicine which every student is required to have. In this subject especially, clinical demonstrations are of far greater value than didactic lectures. The preventive aspect of this disease should be brought home to the student by domiciliary visits and demonstrations of the positive measures which are needed to limit the infection.

Dentistry.—It is not possible in all cases for Dental Schools to be run alongside medical schools. In some cases Dental Schools will have to be separate institutions, but in future planning it is well to take note of the fact that, both from the academic and financial points of view, it is logical for medical and dental education to be carried out in the same teaching centre.

In other centres, dental departments should be opened and the students should be given a short practical course in the subject and taught the importance of dental care in the maintenance of health.

Forensic Medicine.

The questions that arise are :

1. Is a separate course of Forensic Medicine necessary in the medical curriculum ?
2. If so, what should be its scope ?
3. At what stage of the curriculum should this instruction be given ?
4. Where and by whom should the instruction be given ?

A separate course in Forensic Medicine is definitely necessary, as without such a course, the student could not be instructed in the numerous medico-legal problems which will confront him when he enters general practice.

(*i*) *Duration and time when instruction should be given.*—A course not exceeding 40 lectures with demonstrations and medico-legal post-mortems may be given. It should be taught at a stage when the student has already obtained some instruction in medicine, surgery and obstetrics. It would not be wise to place it in the final year, for the final year should be devoted to the three main subjects. The best time is the penultimate year, the subject being covered within two terms of that year.

(*ii*) *By whom should it be taught ?*—There are three alternatives—

(*a*) By a person specially appointed for the purpose.

(*b*) By a police surgeon.

(*c*) By a lecturer in the department of pathology

The subject is certainly best taught by the police surgeon provided he is suitably qualified. The proper qualification is a good experience in the Department of Pathology (five years) with a higher qualification in that subject. Alternatively it may be taught in the Department of Pathology, but in such a case an assistant of the department should be specially trained for the purpose.

The undergraduate must have a grounding in Forensic Medicine. A faulty opinion in an ordinary medical case may be of some inconvenience to the patient but a faulty opinion in medico-legal matters may do permanent damage to a person's reputation and may endanger his liberty or even his life!

The present position in regard to the investigation of medico-legal problems is very unsatisfactory. Every medical practitioner in charge of a remote dispensary whatever his qualification or experience, is asked to undertake medico-legal post-mortems in complicated cases of crime and he is liable to be held in question thereafter. The presumption is that every medical man is competent to undertake these responsibilities, but unfortunately neither the profession, nor the Judiciary or the State have stopped to consider the absurdity of such a presumption.

Assuming the establishment of a State medical service in the future on the lines we have envisaged, a general practitioner attached to a health centre might take up medico-legal work to the extent of a minor speciality. The more complicated work should be undertaken by a specialist, or his advice should be available to the practitioner.

(*iii*) *An Institute of Forensic Medicine.*—There is need for a central Institute which will serve the triple purpose of — (*a*) Training specialists and teachers in Forensic Medicine; (*b*) carrying on research with particular reference to conditions in the Tropics and India; (*c*) to be a centre for expert advice.

Such a centre might well be located in a University centre, Bombay, Madras or Calcutta, or perhaps Delhi, if prospects of its early establishment are brighter there.

Resident facilities for students.—The advantages which will result from students residing in the hospital during a portion of their clinical course are becoming increasingly clear. At present, in many colleges, the student resides for at least one month during his period of training in obstetrics. Similarly it is imperative that he should spend at least a month while working in medical or surgical wards. The minimum period of residence should be three months, the maximum six months. This period of residence should be in the final year of study. During his stay the hospital should be responsible for providing the student with the necessary amenities, the student paying for his board only at reasonable rates.

It is important to see that separate common rooms and study rooms are provided, as otherwise the period of residence would not be utilised to the best advantage in studying and following the practice of the hospital.

If a period of six months residence is feasible the student may spend two months in the study of Practical Obstetrics; one month in Surgery; one month in Casualty work and Orthopaedics; one month in Medicine; one month in Pediatrics. During this period of residence, the student should

be encouraged to do responsible work, and he may be assigned 5 to 6 beds which he will look after under the supervision of a senior houseman or resident officer.

The student's health.—The clinical curriculum should be so planned that students can have at least one month's holiday, and preferably six weeks, every year. The health of the student should be the concern of the medical school which should provide routine clinical and X-ray examination of the chest once a year. Advice and treatment for medical students should be available from the experts of the medical school. Every teaching hospital should reserve a few beds, preferably in a separate ward, for the care of the sick under-graduate medical student. It ought to be impressed on authorities that this should not be considered a special favour, but that the managements of hospitals owe a moral obligation to students and nurses who come constantly in contact with diseased conditions, to provide hospital accommodation if they should need it, free and in separate cubicles.

Steps should also be taken to see that students are able to obtain good mid-day meals at a reasonable price in or near the medical school and that the school shall also contain adequate common rooms. All clinical students must be able to enjoy regular exercise in the open air.

Post-academic residence.—One of the urgent reforms needed is a compulsory House appointment for every medical student at the end of his course and as soon as he is qualified. At present the majority of students on their own initiative seek House appointments and nearly 70 to 80 per cent. of them are so posted. The period of compulsory post-academic residence should be twelve months and this should be after graduation, but before registration.

There are several ways of spending these twelve months, as, for example:—

1. 6 months in medical and 6 in surgical wards.
2. 4 months medical, 4 surgical and 4 obstetric wards.
3. 6 months in the main hospital in surgical or medical wards and the rest at a health centre, or special department, or hospital.
4. The rotating system of being posted every 3 months to different sections.

Whatever form of practice a student is going to adopt he should take a House appointment for a period of six months. The question of how he spends the second six months would depend on the branch of medicine he proposes to take up. There should not be any further examination at the end of the period of 12 months. A certificate of satisfactory work and conduct should be regarded as sufficient.

During this period every house surgeon should be in personal charge of at least 20, preferably 25 beds, and not more, but he should work under the supervision of a permanent member of the unit and under his guidance.

To ensure that every student passing out is posted as a House Surgeon, a survey should be made of the regional hospitals, and such of those as satisfy the standards should be included in the scheme. The University should be responsible for approving such hospitals and one of the clinical staff should, on behalf of the University, periodically inspect the hospitals which take residents.

During the compulsory period of House appointment, every House-man should be provided with proper residential facilities, and should be paid adequately for his services, so that he may be free from financial worries and devote all his time to the duties assigned to him.

The remuneration given for these appointments may take the form of (*a*) Free board and residence, free laundry, etc., with a pocket allowance, or (*b*) Free residence and an allowance ranging from Rs. 60 to Rs. 75 per mensem.

During this time a course of lectures on *medical ethics* and the conduct of practice might be given. The course should include instruction in the organisation of medical and social services available to the community and in the methods of using those services. Such a course would be of greater value at this stage than during a student's final year, when he is overwhelmed with work in preparing for the final examination.

Summary of recommendations on clinical studies.

That the Department of Preventive and Social Medicine should be organised on the same lines as the pre-clinical and clinical departments with centres of teaching and research facilities :

That this department should have control facilities (field work), *i.e.*, facilities for the organisation and control of the rural and urban community fields attached to the department for demonstrating the principles and practice of preventive and social medicine.

That the staff should consist of the following :—

Urban.	Rural.	Hospital (College).
Professor Associate or Asst. Professor, 5 Demonstrators.	Professor Associate or Asstt. Professor, Sanitary Engineer (F. T.), 12 M. O. H.	Professor, 9 Social Workers, 36 Case Workers.

The total being 23, with six senior teachers and exclusive of social workers. In a rural unit, not more than two students should be holding intern appointments in a primary unit.

That, at a very early stage, facilities and trained personnel should be made available to put into operation the scheme of training in preventive medicine which the Committee consider as essential for the training of the basic doctor. A copy of that scheme is given as appendix 29.

That, in the meantime, the preventive medicine aspect should be stressed in the teaching of every subject throughout the clinical course, and the student be given an insight into social medicine by contacts with home and community life.

That a note embodying these recommendations in regard to training in preventive medicine should be circulated to all medical institutions and Universities for information.

That a Hospital Social Service should be established as soon as trained personnel are available.

That an introductory course of instruction in elementary Psychology and Pathology should be given to the students by the Professors of the Departments concerned either in the latter half of the pre-clinical period or in the first three months of the clinical period. Methods of clinical diagnosis, including laboratory technique and the elements of nursing and dietetics with an introduction to social medicine, should be taught at the beginning of the clinical period.

That clinical records should be carefully written up and they should be preserved and these records should be under the charge of a responsible member of the staff.

That, in the teaching hospitals, clinical pathological conferences should be periodically convened at which all the members of the clinical and pathological staffs should be present. The senior students should also be present.

That, just as pre-clinical teaching should have a clinical bias, clinical teaching should be conducted with the scientific bias emphasised at every stage.

That the following should be the periods of clinical clerking and posting of students to wards, it being understood that proper emphasis is laid on out-patient training, especially in the junior stage :

Medical	3 months junior and 3 months senior.
Surgical ..	3 months junior and 3 months senior.
Obstetrics and Gynaecology, including Pediatrics	3 months junior and 3 months senior.
Specialities ..	9 months divided into periods of 3 months each for surgical, medical and social medicine.

(The above periods, added together, make a total of 27 months. Specialities may be attended daily for one month or for 2 days in a week for 3 months).

That the last three months should be available to the student to attend such clinics as he may feel inclined to.

(NOTE.—A view was expressed that 6 months is not sufficient for surgical and medical wards posting and the out-patient clinic should play a larger part.)

That this scheme can be brought into operation provided that the organisation of departments are on the lines suggested, and that well qualified and well trained teachers are available in sufficient numbers, so that there is a proportion of 1 : 8 junior teachers and 1 : 10 for senior teachers.

That every clinical teacher should emphasise the physiological aspects of his subject and should impress on the student the social and preventive aspects of medicine.

That there should be full-time professors in each of the subjects of Medicine, Surgery and Obstetrics with Gynaecology.

That, in the teaching of Obstetrics, special emphasis should be laid on the antenatal physiology of labour. The question of adequate training in Pediatrics should be further considered.

That domiciliary practice should be encouraged and that this should be particularly emphasised for women students.

That all students should be in residence for at least 3 months, one month being spent in each of the departments of Medicine, Surgery and Obstetrics.

That the number of beds in a unit should be at least 40, and that 8 or 10 students should be attached to each unit.

Recommendations on Pathology.

That there should be a well-organised department of Pathology in each teaching centre to include the departments of Morbid Anatomy, Micro-Biology (Bacteriology and Parasitology), Experimental Pathology and Clinical Pathology;

That, in each institution, there should be a Board consisting of the Pathologist, Clinician, Physiologist and Anatomist, meeting at least once a term to coordinate the teaching of those subjects in the clinical period;

That experimental Pathology should form an essential part of the work of the department, and that mammalian experiments should be demonstrated to the students;

That the teaching of Micro-Biology, Bacteriology and Parasitology should be coordinated with the teaching of social medicine, and that there should be opportunities for demonstrations during field work;

That, in the teaching of Morbid Anatomy, planned methods of teaching should be laid down in consultation with the Professors of Surgery and Medicine;

That Pathology and Bacteriology should be taught throughout the period of clinical studies. About 600 hours are likely to be required, exclusive of the time spent at Autopsies;

That the Physician and the Surgeon concerned should attend the post-mortem with the students, and should participate with the Pathologist in the discussion and exposition of the post-mortem findings in so far as these bear a relation to the clinical findings and diagnosis;

That the staff should be whole time and should consist of:—

A full-time Professor;

Three Assistant Professors, or Readers, of whom one will be for Clinical Pathology, and one for Micro-Biology:

One or two Associate Professors, who should be either junior or senior Physicians or Surgeons, the idea being to associate also a junior or senior Obstetrician and Gynaecologist with the teaching.

That the Head of the Department of Pathology should be Ex-Officio Consulting Pathologist to the teaching hospital;

That, in view of the importance of Autopsies in the training of the medical student, it was for consideration whether State legislation was necessary to make them obligatory when the physician or surgeon in charge of the case considered them to be necessary.

Forensic Medicine.—That Forensic Medicine should be taught by a person who should be a whole-time teacher and should have a sound knowledge of Pathology and also a post-graduate qualification in Pathology or Medicine.

General Recommendations.

That Clinical Clerking in Social Medicine should be performed in the afternoon in the 4th year while working in the specialities, and in two groups; the total number of hours being 100;

That Pharmacy may be taught in the earlier part of the clinical course;

That the second course in Pharmacology may be correlated with the lectures and clinical demonstrations in Medicine;

That Toxicology should be taught with forensic medicine;

That Therapeutics should be taught in the latter half of the clinical period;

That there should be a department of Pharmacology and Therapeutics together with experimental therapeutics;

That the staff of that department should include a whole-time Professor of Pharmacology and an Associate Professor of Therapeutics and assistants, one of whom should be a chemist;

That every teaching hospital should have at least one fully qualified pharmacist and that he should assist the department of pharmacy;

That it is desirable that, in the clinical professorial units, one of the assistants should be a trained pathologist and that he should be available for teaching, research and consultation;

That samples of blood, urine, faeces, smears, etc., should be examined in the side laboratories and that these laboratories should be equipped for this purpose;

That, as far as possible, autopsies should be done at a fixed time but, in cases where this is not possible, the pathological specimens collected from the post-mortem should be exhibited for 24 hours in a convenient place together with full clinical or pathological notes on the case;

That there should be a Museum under a full-time Director, containing a small and adequate number of specimens in each subject selected from the point of undergraduate teaching and with full notes available.

That the teaching of operative surgery and applied anatomy might be covered in 30 or 40 classes—(a series of window dissections is particularly useful for the study of Regional anatomy).

Opinion was divergent as to whether undergraduates should be given training in operative surgery on the cadaver, and whether an examination should be conducted on the dead body.

That it was extremely desirable that every medical student should be given adequate training in First Aid and Ambulance work in the pre-clinical period and that those who joined the U.T.C. should be exempted as it was considered that they would be sufficiently trained.

(e) *Medical Examinations.*

The system of examinations for the undergraduate who has entered on his regular medical studies deserves careful consideration. In a publication issued not long ago under the arresting title "An examination of examinations", by Sir Philip Hartog, it was made clear that, even in the valuation of the written script, there were wide variations between examiners, the variations ranging between 30 per cent. and 75 to 80 per cent. The possibility of such variations is not less in the conduct of clinical and viva-voce examinations. Well trained and seasoned examiners are an asset, but there is an advantage in gradually including fresh talent, so that the system of examination should not be petrified and static.

In a well regulated scheme, there should be internal and external examiners in equal proportion. This is not always possible in India, where long distances, time needed for examinations and the expenditure likely to be incurred may make it difficult. Examinations have, after all, a limited value, but the more important consideration is the provision of adequate facilities for teaching, competent staff with a liberal number of teachers and the provision of well equipped laboratories, a library and an adequate range and variety of cases. The conception which medical councils have apparently acted on, that an inspection of examinations furnishes material to judge of the standard of medical qualifications, should be radically revised.

There should be three examinations in the course :—

1. At the end of the pre-clinical period.
2. A year or 6 months, preferably a year, prior to the last year of study.
3. The final test at the end of the course, in medicine, surgery and obstetrics.

It is desirable that examiners should desist from asking about rare or complicated conditions, and should devote their attention to the commoner diseases met with in practice. Their task is to find out what the student knows, rather than what he does not know.

It is also desirable that examiners should devote some time to the preparation of the practical and clinical tests and should themselves conduct these tests, or examine fully and study the clinical cases before they are set to the students. An examiner should have no more facilities for the diagnosis of a case than are available for the candidate, and emphasis should be more on methods of approach and reasoning than on the giving of a diagnosis.

Summary of recommendations on Medical Examinations.

That there should be, in the whole medical course, two examinations held; one at the end of the pre-clinical period including the subjects of anatomy, physiology and pharmacology, and the other at the end of the clinical period when the following six subjects shall be offered :—

Preventive and social Medicine, Medical Jurisprudence, Medicine including Therapeutics and Medical Specialities, Surgery including Surgical Specialities, Obstetrics and Gynaecology including pediatrics, and Pathology.

That a student can pass in each subject separately provided, however, that he shall complete a pass in Medicine, Surgery, Obstetrics and Gynaecology within a maximum period of 18 months. The medical examinations should be held twice a year. (Note.—It should however, be open to the University

to hold an examination in the subjects of Pathology, Forensic Medicine and Preventive Medicine, six months to one year before the final examination in Medicine, Surgery and Obstetrics).

That no student shall be allowed to enter on his clinical course of studies until he has passed the pre-clinical examination.

That, so far as possible, external examiners should be associated with the conduct of the examinations, and that it should be the aim of all Universities to see that, in medical examinations, at least half the examiners are external.

There should be no attempt to impose a stereo-typed curriculum throughout the country. A wide margin of liberty should be allowed to individual medical schools and Universities to develop their own potentialities and even to experiment. Reforms and improvements can more easily and quickly be brought about in this way. Where reforms have to await agreement among a large number of institutions, the results are invariably a compromise, and a sense of frustration is developed in those institutions, which desire to initiate reforms.

(*f*) *Internship as Home Surgeon or Physician.*—There should be, for all students, one year of internship after the final qualifying examination and the authority responsible should certify that that internship has been satisfactorily fulfilled. This period should not give the student the rights of a full practitioner, but during it he should work under the supervision of a Senior Officer.

That the conditions under which hospitals should be recognised for internship should be considered and definite rules laid down by the University. Such hospitals should be periodically inspected and reported upon.

The intern should not displace senior housemen, clinical assistants and resident assistants. The need for such senior housemen will be all the greater, for effective supervision and help.

A careful record should be maintained of clinical work carried on and uch records should be certified by the Senior Officer under whom the student works.

During this period, in whichever ward he is posted, the intern should perform duties in the out-patient department and should work in the clinical pathological laboratories. During the whole of this period, he should be carefully supervised and guided.

That there should be latitude given to the authorities concerned to post the intern to any of the following assignments provided a three months' internship in a public health unit is always included.

1. Six months surgical or six months medical work.
2. Four months medical, four months surgical or four months obstetrical work.
3. Three months rotation including, medical, surgical, obstetrical work and public and rural health centres.

That the numbers of beds assigned to each intern should be between 10 and 20.

That the intern should be given free residence in the hospital and should receive a subsistence allowance of Rs. 60 to 75.

That, as far as possible, the intern should spend six months in a primary teaching centre either in the first or the second half of the period.

That, during the period of internship, a few lectures on medical and legal responsibilities should be given by a person selected by the University.

Essentials in a hospital approved for interns.

The hospitals approved for the training of interns during the last year of the graduate course should comply with some general basic principles. In enunciating these principles it is not intended to interfere with the administration, or the general policy, of individual hospitals which may be recognised for the above purpose. It is however believed that, in the interests of better medical education and of improved scientific and ethical care of the patients, there should be a wide agreement on the minimum requirements to be met regarding conditions of service, organisation of training and educational facilities available at such institutions. It is therefore considered that an acceptance of these general principles by the hospital authorities is necessary, if they intend to take up the training of interns.

I. *Hospitals eligible for approval.*—Only general hospitals should be eligible, which have at least 100 beds with a minimum daily average of 75 patients, and which provide a variety of medical, surgical, obstetrical and pediatric patients either in the hospital proper or through suitable affiliations with other institutions.

II. *Organisation.*—The organisation should consist of a Governing Body having authority and responsibility to execute the decision arrived at by such a body. In the case of Government, or Municipal, institutions this body should have statutory powers conferred on it, enabling it to give effect to its resolutions within the framework of the general policy and within the limits of the budget provisions sanctioned by the Government or the Municipality.

An Executive Officer, or a Superintendent, should be responsible for the actual carrying out of the resolutions adopted by the Governing Body. The Executive Officer should be assisted by adequate and competent personnel. Such an officer should be selected on an All-India basis and should not be appointed for a period of less than five years.

III. *Staff.*—The appointment of the staff constitutes the most essential feature in the organisation of an institution. The staff should be composed of regular physicians who are properly qualified as to training, licensure and ethical standing.

1. *Senior Staff.*—There must be an organised staff of physicians who hold the degree of doctor of medicine, or an equivalent post-graduate qualification, from acceptable medical colleges; who are of unquestioned professional and moral integrity; who are proficient in general practice, or in the special fields to which they devote themselves; who give personal attention to the patients under their charge and who will provide adequate facilities, instruction and that sympathetic cooperation without which interns and graduate students cannot obtain the practical training for which they are serving the hospital.

2. *Graduates in Medicine.*—The hospital must not only confine membership of its staff to reputable practitioners who have obtained post-graduate degrees but should also select a junior staff from suitable graduates in medicine. The conditions regarding ethics and character must apply to every person permitted to treat or prescribe for the sick in the hospital, or in any of its departments. Conditions regarding graduation do not apply to the treatment of patients by nurses, messeurs, and technical assistants when acting under the orders of any physician on the attending staff.

3. *Staff Conferences.*—The hospital staff should conduct a regular monthly staff conference at which the work of the various hospital departments is considered and where interesting hospital cases and selected autopsy reports may be presented for general discussion. The interns should be expected to attend these meetings and should be encouraged to take an active part in the discussions.

IV. *Nurses.*—A competent nursing staff should be provided by employing a sufficient number of nurses who are graduates of schools of nursing recognised by the registering authority for nurses, or by maintaining a school for their training. All nursing should be supervised by qualified registered graduates.

V. *Records.*—The accumulated experience of most of the teaching hospitals in other countries has shown that no improvement in the treatment of patients and the training of medical students could be effected without the organisation and functioning of an efficient department of medical records. An adequate record system should therefore be maintained in all approved hospitals. No particular system or set of forms is recommended since requirements are not the same under varying circumstances. The average case record should conform to the following standards :—

1. The case records should be comprised of complete histories giving the patients complaint, physical examination at time of admission to the hospital, preliminary diagnosis, laboratory findings, description of operation, if any, progress notes, final diagnosis, condition on discharge and, in case of death, autopsy findings if secured.

2. Case Notes.—The histories should show, by signatures or initials, all persons writing them, or parts of them, as well as the staff members by whom the histories are verified. Likewise, all orders and progress notes should be initialled or signed.

3. A competent clerk should have charge of the records pertaining to patients. To be of educational value the records must be so handled as to be readily accessible when desired for special study or reference work. There should be an alphabetical index of patients, with cross files according to diagnosis, operations, etc. Lists should also be kept of patients according to departments, *i.e.*, medical, surgical, obstetrical, padiatric genitourinary, gynaecological, eye, ear, nose and throat, tuberculosis, etc., and of hospital days or daily average of patients, deaths and autopsies. Histories should be filed so as to be easily accessible. Complete monthly reports and annual summaries should be prepared covering the various hospital departments.

VI. *Laboratories.*—A clinical laboratory in the hospital should be equipped both for the ordinary routine tests, and also for the more technical bacteriologic, serologic, chemical, basal metabolic, and tissue examinations. A competent physician-pathologist (not only a trained technician) must be in charge of the laboratory, who shall supervise the work in general and personally examine all tissues from the operating rooms and furnish reports of gross or microscope findings as indicated. Records must be kept in the laboratory of all work carried out by the department, and copies should be filed with the patient's clinical record.

2. All tissues removed in the operating room should be examined, described and diagnosed by a competent pathologist, excepting tissues, such as tonsils and teeth, in which the pathologic changes are quite obvious.

A physician-pathologist should be employed on a full-time or part-time basis. When this is not practicable, arrangements should be made with a consulting pathologist for tissue diagnosis, post-mortem work and the interpretation of the more complicated tests and determinations in clinical and surgical pathology, as well as in general clinical laboratory work. The pathologist should preferably be one who has received specialised training after graduation for at least one year in Clinical Pathology at an institution recognised for this purpose.

3. In as much as the percentage of autopsies has come to be recognised as an index of the educational activities in a hospital, no institution should be approved for the training of interns which does not have a record of autopsies of at least 15 per cent. This condition may be difficult to comply with in all parts of India at present, but it should be the aim and endeavour of all hospitals to attain to it in the course of the next ten years. The autopsies should preferably be performed in the hospital by, or under the supervision of, the hospital pathologist who has special knowledge of this type of work and who can furnish reports that include a summary of the clinical records and a detailed description of gross and microscopic findings.

VII. *Library.*—1. A separate, suitable reading room in the building should be provided for the use of the medical staff and the interns. A librarian or library clerk should be appointed to look after the issue and care of books and journals.

2. An annual grant of at least Rs. 1,000 should be allocated for books and periodicals (*i.e.*, excluding salaries of staff and cost of furniture, etc.) and of this amount at least Rs. 500 be spent on current medical periodicals (foreign and Indian Journals). The balance to be spent on reference books, monographs and annual reviews.

3. It is essential that all journals should be bound at the end of the year and kept for reference.

4. An initial expenditure of about Rs. 5,000 for purchasing reference books, etc. and perhaps including a microfilm reader would be a desirable addition.

The above suggestions relate to a hospital with 100 beds. For bigger hospitals with a larger staff and facilities for training a larger number of interns, a correspondingly larger expenditure on library facilities would be desirable.

VIII. *Department of Radiology.*—This department should be equipped for at least roentgenographic and roentgenoscopic procedures and must be directed by a physician-roentgenologist who is properly qualified for the work which the department purports to do. Records of the work carried out must be on file in the department, and copies should be filed with the clinical charts.

IX. *Records of Interns' Work.*—Each hospital should keep a weekly or monthly record of each intern's work. This information is most conveniently supplied to the superintendent of the record office by the interns themselves on special forms where space is provided for the following :—Period covered ; service ; number of patients admitted on service ; number of histories and physical examinations ; number of anesthetics given ; number of operations assisted at ; number performed ; number of deliveries attended ; number performed ; autopsies attended ; hours in laboratory ; lectures attended ; clinics attended, etc.

X. *Admission to the Approved List.*—Application for Approval. Hospitals that wish to be accredited for intern training should apply to the Council on Medical Education and Hospitals, or such organisation as may be properly constituted by the Universities. A list of approved hospitals should be circulated to the different Universities and the heads of medical colleges at stated intervals.

PART II.

The requirements of a Medical College.

(Note.—This subject is brought to the notice of the authorities concerned because of its importance in the light of new developments.)

(1) As a result of the survey of medical education, it is hoped that medical colleges will consider the need for reorganisation and that plans for extension and improvement of existing structures and facilities will be prepared.

(2) Active steps are being taken in several provinces to convert medical schools to medical colleges.

(3) It is expected that as a result of the recommendations of this Committee different provinces will open new medical colleges and plan them on modern lines.

It seems, therefore, desirable that there should be set down a general idea of the requirements of an ideal medical college.

The ideal medical school should be capable of providing the student with the whole of his medical education, from the time of his entering the school until he is qualified, after which a resident post should be found for him, either in his own school or elsewhere, before he goes into practice.

Site.—To allow adequate room for the erection of a medical school, it is suggested that a site of from 100 to 150 acres in extent should be available to accommodate :—

(*a*) The Medical School with its pre-clinical departments.

(*b*) A General Hospital.

(*c*) A series of special hospitals, institutes or units. The whole site should form a teaching hospital centre, and its component parts should be comprehensive enough to provide the nucleus of teaching in all subjects, as well as the direction of research and of post-graduate studies. Each of the institutes or units should be flexible enough in construction to allow for expansion if necessary.

(*d*) Quarters for a full-time staff.

An alternative suggestion is that the teaching centre shall provide units to the specialities to be utilised for undergraduate teaching, while special hospitals are located within a convenient distance and utilised for the instruction of post-graduates, and specialists who aspire to become consultants.

Number of students.—This must depend both on the accommodation and facilities available in the pre-clinical departments and on the number of beds and the clinical material available in the associated hospital.

The number of students that should be admitted into a medical school has been the subject of considerable discussion.

It has been suggested—

(1) that 50 admissions a year is desirable,

(2) that 60 to 70 should be an optimum, and

(3) that normally 100 should be the maximum.

In the medical school proper there should be an adequate number of large and small lecture Halls ; laboratories, preparation rooms, etc. ; a library and reading rooms ; common rooms ; a department of research with special facilities.

Well planned and well equipped laboratories, however, cannot provide satisfactory service unless they are manned by an adequate number of suitably trained technical assistants. The selection of these should not be by the haphazard methods of the past. Their training should be systematised by instruction in technical schools or departments, and they should be adequately paid.

As distinct from individual departmental requirements certain facilities and equipment of a general character are needed. Museums, including a radiological museum, should be readily accessible to all students and should contain sections specially arranged for teaching purposes. Means both for taking and for showing cinema films to students should also be provided.

Many departments such as Biology, Anatomy, Physiology, Pathology, Experimental Medicine and Surgery, Pharmacology, Bacteriology and Midwifery as well as the research unit require to maintain live stock. This need is best and most efficiently met by organising a central animal farm under the care of a Veterinary Surgeon, where Genealogical Histories would be kept. Each unit could indent on the farm but should have its own animal house under proper conditions where the department would carry out its investigations.

The actual accommodation of the departments should be on an ample scale so as to permit of any expansion to meet future requirements in the advance of medical education. Not infrequently work has had to be carried on under cramped conditions as old buildings have become out of date and inadequate for the expanding work of medical education and research.

Hospital accommodation.—The hospital in a teaching centre should be so designed and organised as to meet both the needs of the patients and the requirements of students and also to be suitable for the research work of the staff. Wherever post-war construction of teaching centres or reconstruction of such centres may be needed opportunity should be taken to see that all three aspects of work carried on in a teaching centre are fully provided for.

It is very desirable that a teaching hospital should be provided with proper residential accommodation for its full-time junior staff, for its students in their last year of study and for interns.

Number of beds required in a teaching centre.—The number of beds required should be based in general on the number of students admitted in a year. It may be stated that there should be 10 beds per student admitted, and that half this number should be for general medical and surgical cases in equal proportions, and the other half for the specialities, which should be provided for within the area of the teaching centre.

A rough plan would be to provide, in a 1,000 bed hospital, for—

	Beds.
Medical	250
Surgical	250
Obstetric	100
Gynaecological	50
Ophthalmic	50
E. N. T.	30
Dermatology	20
Radio-Therapeutics	20
Tuberculosis	20

	Beds
Dental	10
Orthopaedic with fractures	50
Pediatric	50
V. D.	25
Others	25
Research pool	50

It should be emphasised, however, that the number of teachers rather than the amount of clinical material or beds available should determine the number of students annually admitted.

There should be in each teaching hospital :—

1. Lecture rooms for clinical demonstrations.
2. Test-rooms.
3. Out-patient departments.

Lecture rooms.—There should be two main lecture rooms for the whole hospital, to seat at least 100 and equipped with black boards, facilities for micro-projection and for wheeling in patients, with an ante-room where they could be accommodated until required for demonstration.

One small clinical demonstration room for each unit, to accommodate about 30 students, is desirable.

Test rooms.—There should be one test room (ward laboratory) provided for each clinical unit. There should be at least one test room for the out-patient (general) and one test room for the skin and venereal departments.

Clinical laboratory.—There should be a large well equipped central laboratory for the whole hospital, where the more complicated tests, Bacteriological, Pathological and Biochemical, will be conducted.

Out-patient Department.—In many hospitals, perhaps the least well equipped and organised section is the out-patient department. Yet this department furnishes a wealth of clinical material for teaching purposes and, forming as it does a link between domiciliary practice and institutional practice, should be of the greatest value for teaching. The first essential in all out-patients departments is to make the out-patients comfortable during the long period of waiting. There should be adequate waiting, examination and undressing rooms, and arrangements made for some form of canteen service.

It is desirable to have separate small cubicles where the teacher may systematically examine the patient and demonstrate to the students. The mixing up of old and new cases is not desirable. Careful records should be kept, and an intelligent secretariat should be maintained for cataloguing and indexing the cards, and for issuing them to the patients. Every special department should have its own out-patient clinic.

The need for special laboratory facilities and for a diagnostic radiological outfit need not be emphasised.

The medical and surgical out-patient departments should be conducted by the medical or surgical units on their respective days for admission, and the students posted to the unit should attend the out-patient department on such days. Depending on the number of out-patient cases, it may be necessary for more than one unit (Medical or Surgical) to attend.

There should be a well organised casualty department in each hospital, situated in the out-patient department and every student should receive instruction in accident work.

Adequate range and variety of cases and the linking up of hospitals for teaching purposes.

Regionalisation of hospitals for undergraduate and post-graduate teaching will be of considerable use in as much as it will be possible to draw a great variety of cases from these hospitals for teaching purposes. The hospitals, if properly staffed, could be used for posting junior students as medical clerks or surgical cressers, for posting housemen and for refresher courses for students who had failed and were required to put in an additional three months work.

Rehabilitation centres.—Rehabilitation centres should be available at a convenient distance for use by teaching hospitals so that convalescents and chronic cases may be transferred to such centres and be under the care of a trained staff sent from the teaching hospital. Such centres besides giving reasonable rest for the patient, would relieve the congestion in teaching hospitals and would enable the students to follow up cases by a weekly visit with a member of the senior staff.

Staff of the Medical School and Hospital.—The preclinical and clinical laboratory staff should be full-time, the heads of the respective departments being full-time professors with a sufficient number of senior and junior assistants and demonstrators. There should be 1 teacher for every 8 or 10 students, the number of demonstrators being restricted to two-fifths of the total staff. In all practical classes there should be at least 1 teacher to supervise 15 students and the practical classes should be small, the total number attending at a time being limited to 30 or a maximum of 40.

Clinical Staff.

Types of teacher.—There are three types of teachers who may be employed :—

1. *Heads of departments in charge of units.*—Those may be in charge of the three units of medicine, surgery and midwifery. These should be full-time.

2. *Part-time teachers.*—Part-time clinical teachers are valuable as they are in contact with the problems of general and consulting practice and can provide a variety of experience and teaching. They must, however, devote an adequate part of their time to teaching, and should receive remuneration for teaching duties and hospital services. Such salaries should carry with them definite obligations in this respect.

3. *Senior and junior teachers.*—These should be available in sufficient numbers. The senior teacher is best fitted for practical teaching, while the junior teacher is best fitted for the inculcation of routine methods of examining patients and for assisting the student with problems arising during his studies.

In making appointments to the staff of a teaching hospital teaching ability should carry due weight.

Full-time staff (clinical).—Full-time heads of the departments of Medicine, Surgery and Obstetrics, together with full-time assistants, are needed to organise teaching and research in the subjects.

The full-time professor should, however, have no control over the clinical work of part-time teachers, nor exercise any authority over other members of the staff who are not working under him directly, except in the matter of coordinating teaching in the department concerned. With good-will on both sides and with a genuine interest in teaching an harmonious relationship ought to exist and the full-time head of the unit should be looked to

for help and advice in regulating teaching in the best interests of the school. For purposes of clinical lecture demonstrations, the clinical material of the hospital should be made available to all teachers (clinical and pre-clinical).

A full-time professor should be appointed without the right of practice. Such a person should be selected for his outstanding abilities and should have had a large experience of the practice of his profession, both domiciliary and institutional. His ability to teach and to enter into cordial relations with his colleagues should be taken into consideration. His salary should be such as to secure the right type and to free him from all financial embarrassment. A salary of Rs. 1,500—2,000 is not excessive.

The junior teaching staff, as well as one or two senior assistants, should hold whole-time salaried posts and should have no right to practice.

Part-time appointments.—Part-time clinical teachers are of value as they are in contact with problems of general and consulting practice and are best fitted to train future general practitioners. By their number they provide variety of experience and teaching. They must, however, devote an adequate part of their time to teaching. All hospital teachers in the clinica period should receive salaries. In the part-time posts, outside consulting work must not be allowed to impair the efficiency of hospital work and teaching, and some arrangements as to supervision and control should be made by the authorities of the hospital concerned. Regular attendance and regular hours of teaching should be observed by all members of the teaching staff; and other distractions, whether of administration or professional work, should not be permitted to prejudice this essential work.

Status of teachers.—It is of fundamental importance that medical teachers should have complete freedom in the control of the beds in their charge and in their methods of teaching and treatment. The teacher should have full clinical charge of the beds allotted to him subject only to the general administrative supervision of the Dean, or Superintendent, of the hospital.

Salaries may vary in the different grades but should be such as to attract in each grade the right type of person. Part-time clinical teachers may be appointed for a period of 5 years in the first instance and may be continued for a further period of 5 years subject to a satisfactory review of work at the end of each period.

The following scales are suggested :

	Rs. p. m.
Full-time Head	1500 to 2000
Full-time Senior Assistant	500 to 1000
Full-time Junior Assistant	200 to 600
Part-time non-professional staff	500
Part-time Junior staff	250 to 350
Registrar	300 to 450
Senior residents	200 to 300

For all full-time posts reasonable arrangement for study leave should be made. Facilities for study leave should also be available for part-time teachers when reappointed to their posts.

Library.—The position of the library should receive special consideration in a Medical College. It must be confessed that, in the past, library facilities both for the staff and for the students have been rather meagre. In medicine new books and new editions are constantly being published and no member of the staff can be expected to possess a complete library of his own. Medical

journals have also to be obtained in more than one language. A College should therefore make generous provision annually for its library. At the same time care should be taken to see that such facilities are made available to all members of the staff, and that a few senior members should not have a monopoly of the latest literature. Subject to the needs of the staff, the medical practitioners of the locality should have access to these books in the library premises, but not for taking away.

The need for a section of the library being reserved for students deserves emphasis. The heads of the departments should carefully select suitable books and see that they are made available to students. More than one copy may be needed in some cases. A proportionate allotment of funds should be spent on the students' library. This may be fixed at one-fourth of the total allotment. It is desirable that medical journals should also be made available to students, and that some selected journals should be kept in the students' reading room.

A well qualified librarian, preferably one who knows more than one modern European language, should be appointed on an adequate salary.

Selection of Medical Students.—This has been the subject of careful study in many countries. It is generally recognised now that, in the profession of medicine, the doctor is dealing with people rather than with abstract diseases. Although a scientific attitude is necessary in a doctor it is not absolutely essential, and character, culture and ability to deal with men often prove to be more practical attributes.

The selection of the best students is difficult and demands considerable experience. It may, however, be stated that while emphasis should undoubtedly be laid to a certain extent on academic attainments, a great deal has also to be placed on the previous college record, personality, physical fitness and character as judged by the share taken by the candidate in school and college activities such as sport, dramatic and debating societies and in public service. The general suitability of a candidate should be finally determined in a personal interview by a selection committee.

Women students.—In view of the large numbers of women doctors needed, every medical college should admit women students in reasonable numbers, and for some years special facilities should be made available in order to attract them. It is significant that, with the exception of the Government of Madras, which gives free medical education to women students, no other provincial Government has so far given any special facilities to women. Yet the need for women doctors is greater in Northern India than elsewhere.

A due proportion should be maintained of men and women doctors. The wastage is greater in the case of women doctors, both during training and subsequently. The ultimate proportion of men to women students should be approximately three to one.

Summary of recommendations on the selection of students.—That in the selection of students the academic record should be given its due weight but physical fitness and any special athletic record, inter-collegiate or inter-University, should be taken into account. When aptitude tests are available, they should be utilised in the selection of students, while a personal interview will serve a useful purpose.

That in judging academic records the University record should be taken into account. It is not desirable to hold a separate academic test to judge the standard.

Recommendations as to women's education and the selection of women candidates.—That in view of the large number of women doctors needed, more medical colleges should be open for women.

That facilities should be made available, by way of free studentships to encourage more poor and deserving women students to study medicine.

That the question of taking bonds from them to serve as Doctors for a certain period should be ultimately dropped.

Research.—General questions of medical research and the manner in which research should be organised, fostered, and encouraged are being dealt with by a separate sub-committee, but the place of research in a medical college needs consideration here.

The whole attitude of medical colleges towards research should be enlivened. It should be realised that a medical college does not entirely fulfil its functions if it contents itself only with training doctors and treating patients. The advancement of knowledge should be the third objective of every teaching unit.

In all teaching hospitals sufficient funds should be available for research, and the post-graduate education of the younger men should include ample opportunities for training in methods of original investigation. A block of beds should be set apart for a research unit and should be made available under suitable supervision, for teaching as well as for research.

There should be an advisory committee in the Hospital, on which should be representatives of the clinical, pre-clinical and scientific departments, which will advise as to the best provision to be made, for young medical graduates to be drilled in research methods.

Deans of colleges and hospitals.—The administrative responsibilities of colleges and teaching hospitals, the care of the students and the varied duties imposed on heads of institutions make it necessary to consider whether Deans of colleges and hospitals should not be appointed as whole-time officers with little or no teaching or clinical responsibilities. It is impossible for a person who is the head of a department to have the time or the energy to undertake these responsibilities without the sacrifice of some part of his more important duties.

The Dean should be appointed for a period not exceeding five years and should be selected from among the full-time professors. During this period he should have no clinical or teaching duties.

Age of Teaching Staff.—While there may be exceptional cases where members of the teaching staff can carry on their duties efficiently to an advanced age, it is desirable in general to limit the age to 55. Facilities for the continuance of research work should, however, be available to such officers, should they desire them after retirement.

Grants to teaching centres.—The question of assisting teaching hospitals by educational grants deserves careful consideration. Medical colleges are now managed by—

(1) Provincial Governments.
(2) Municipal Corporations.
(3) Private bodies acting as Trusts or Corporations.
(4) Mission Agencies.

So far there are no colleges mnaaged by the Government of India direct, nor have any grants been specially given to medical colleges managed by any of the above bodies.

In the report of the Central Advisory Board of Education, the suggestion has been put forward that there should be a University Grants Committee erected, on the lines of the Grants Committee, to recommend treasury grants to various educational institutions. If such a committee is constituted, the medical college proper—*i.e.*, the laboratories and departments of pre-clinical and clinical sciences, will share with other colleges of science in the allocation of grants. The amenities for students should also be considered.

For creating improvements in medical education, however, it is important that (1) teaching hospitals should receive grants with a view to ensure proper standards in teaching, treatment and research. The teaching hospital will have much greater commitments in salaries of teachers, and the number of men employed will be much greater than in a non-teaching institution. The hospital will require the services of full-time teachers who have made a mark in their profession, while part-time teachers should also be paid for their teaching and hospital duties. (2) The supply of proper accommodation for House-men, Junior and Resident staff and Deans, the equipment and special instruments needed, the laboratories, lecture rooms and cubicles for clinic both in the in-patient and out-patient departments, the better equipped operation theatres needed—all these require special grants. In the past, much of this accommodation and equipment has not been made available, with the result that teaching has too often suffered.

A special " Teaching Hospitals' Grants Committee " should be set up to recommend, obtain and award grants to these institutions, on the basis that the hospital does not fall below the standard of efficiency that should be aimed at by a properly equipped and conducted hospital. It may roughly be stated that a teaching hospital requires 25 to 35 per cent extra money for expenditure on items such as those mentioned above.

The grant may be based on two calculations—

(1) A basic allocation taking into consideration the number of students and the range of services available.

(2) A supplementary allocation related to special needs and the special features of individual institutions.

The distribution of the grants by this committee should be without prejudice to, or interference with, grants which may be given by the proposed University Grants Committee.

APPENDIX 29.

Scheme for the training of the basic doctor during his undergraduate course in preventive medicine and public health.

The Sub-committee dealing with the curriculum for the training of the " basic " doctor dealt with the subject of undergraduate training in public health and preventive medicine at its meeting on Tuesday, 4th July, 1944. Among the papers circulated, an Interim Report of the Social and Preventive Medicine Committee of the Royal College of Physicians, London, (October 1943), a note by Dr. J. B. Grant, on " undergraduate training in preventive medicine and public health " and another note by him on " Hospital social service ", received special consideration.

The following recommendations were made by the Sub-committee:—

1. The scheme of training for the basic doctor should incorporate the idea that the teaching of preventive and social medicine should permeate the whole course. The interim Report of the Royal College of Physicians (October 1943), on this subject must be consulted for a picture as to how this can be done by teaching in these matters running parallel with that of the three clinical subjects for a three-year course.

2. The department of preventive medicine and public health in a medical college must be provided with the same standard of academic facilities as are accepted as essential for the pre-clinical and clinical departments. This implies a full-time staff provided with facilities for the investigations of health problems in university controlled rural and urban community centres in which the student can be given opportunities of participation in supervised health work. The training in preventive medicine given to the student should be on the lines described under the heading " (B) Preventive Medicine for the General Practitioner " on pages 2 & 3 in Dr. Grant's note " Undergraduate Training in Preventive Medicine and Public Health ". The method of teaching described is that which was developed in a modern college hospital and is quoted below for the sake of easy reference.

" Patients residing in the Area who visited the hospital were utilised for follow-up from the preventive standpoint. Preventive teaching was based upon the following generalisations : (*a*) The primary aim of medical education is the preparation of general practitioners, (*b*) the goal of the medical profession should be medical service both preventive and curative, (*c*) a preventive *habit* is necessary to induce the general practitioner to adopt in his daily practice of medicine an attitude and spirit of scientific prevention, (*d*) habit can only be cultivated through the repetition of the same function under certain conditions. A preventive habit in clinical medicine can only be cultivated in the practice of clinical medicine and not elsewhere.

The procedure adopted was as follows : (*a*) individuals for preventive study were obtained through the hospital and outdoor, (*b*) investigation of the social-environmental factors of the cases and the microbiological aetiology of the disease was undertaken by officers of the Health Station of the Area.

(*i*) The first visit was to investigate home environmental factors, personal habits, family attitude and other social, health or related factors which might have a bearing on the illness;

(*ii*) The second visit was to check the extent to which the patient and family co-operated in following treatment and advice ;

(*iii*) Subsequent visits were to collect any missing data and for follow-up of the case ;

(*iv*) Finally, at dismissal of a case, a summary was made of the findings including statements commenting on the value of the permeation procedure in the case.

Due both to the crowded clerkship period as well as that certain diseases more readily lend themselves to demonstration of prevention, preventive routines were practised only in the following eleven categories :—

1. Smallpox
2. Diptheria
3. Scarlet Fever
4. Typhoid Fever
5. Syphilis
6. Gonorrhoea
7. Tuberculosis
8. Ante-natal cases
9. Postpartum cases
10. All children below age of five
11. Infantile diarrhoea.

A special officer from the Department of Public Health of the College was detailed specifically to the hospital to supervise the cases and the students' routines. Briefly the latter were as follows : All patients coming to the hospital from the area were designated by record forms of a special colour in order that students and hospital staff would be aware of the patients' residence. The Registrar notified the names of all such cases immediately to the Department's medical officer at the Health Station. Each case was taken up by a health visitor until the case was closed and where indicated by a medical officer. The reports of the results of the preventive measures undertaken were sent from the Health Station for inclusion in the patient's hospital record. In the meantime, if the patient was a hospitalized case, the medical clerk after completing his clinical routines, and if the case came under one of the 11 categories, would go to the patient's home to determine the social-environment or specific microbiological factors causing the disease and diagnose the preventive measures that might be indicated in each instance. This the student would add to his record of the case. Then on ward-rounds, the student would present 2 diagnoses : first, as to the clinical condition : and second, as to the aetiological factors together with, in each instance, the therapeutic recommendations indicated. Diagnoses and therapy would then be commented upon consecutively by the clinician and the public health officer. In case of death and autopsy, the case would be presented at the routine clinical-pathological-conference where diagnosis, etiology and prevention would be discussed jointly by the pathologist, clinician and the public health officer. Preventive results over a period reported were : Failed 8%. Indifferent 25%, Benefitted 67%. The most essential factor in " failure " or " indifferent ", was social economic in a community whose economic level was approximately that of urban India, the chief reason being that the College was not willing to provide the per capita funds for prevention which it provided for treatment. Thus while, on teaching grounds the hospital gave free treatment to 55% of patients and costing several lakhs per annum in order to demonstrate clinical diagnosis and therapy, the few required dollars per case were unobtainable to prevent recurrence of the etiological causes bringing the case to the hospital in the first instance."

3. Public health administration has three objects in view, namely, the maintenance of health, prevention of sickness and early diagnosis and cure of disease. It seeks to achieve these objects through organized community

effort in order to ensure their more effective fulfilment than if left to the responsibility of the individual. In the training of the medical student the responsibility for each of these different aspects of public health is shared by various teaching departments. For instance, the teaching of the student in the medical knowledge necessary for the maintenance of health is the responsibility chiefly of the Department of Physiology. That of prevention of disease is shared between Microbiology and Pathology ; and the teaching of the application of the methods of early diagnosis and preventive treatment of disease is a responsibility shared between the teachers of Clinical Medicine, Surgery and Obstetrics. The task of the Public Health and Preventive Medicine Department of the college is that of demonstrating to the student the utilisation of the instruction given in these several departments in the life of the community, through organised effort, in order to achieve the three objectives outlined above. Such training can be given adequately only if the students are afforded opportunities to teach themselves through participation in the preventive health work carried out in a field centre under the direction of teachers, who are the health administrators. Separate urban and rural centers will be required for each medical college because the environmental and other health factors associated with the two types of areas vary widely.

4. An essential feature of such field training centres should be the provision for the required administrative control to the authorities of the medical college concerned. A method by which such control, on a basis of cooperation between local health authorities and the management of the college can be secured, may be illustrated by describing the Singur Health Centre which has been recently organised under the joint auspices of the Government of India and the Government of Bengal and which provides a field training centre to the All-India Institute of Hygiene and Public Health, Calcutta. The Government of Bengal and the Local authorities of the area included within the scheme together shoulder the financial burden for the health organisation that has been set up for the routine health administration of the centre. At the same time the Government of India is cooperating in the scheme by making available to the centre the technical advice and guidance which the Director, Professors and their Assistants of the Institute can offer. There is a Technical Adviser consisting of the Director of the Institute, the Director of Public Health, the Surgeon-General with the Government of Bengal and certain other officials. The day to day administration is in the hands of a Committee consisting of the Professors of Institute. The recruitment of personnel is to be done by the Technical Advisory Committee in order to ensure that the requisite standard of professional skill and training is secured.

In order to give the staff of the Institute the requisite legal standing for active participation in the health administration of the area, the necessary legal powers and the status of health officers have been conferred on them by the Government of Bengal.

5. From the point of view of the Provincial Government the main advantage that the centre offers is that it provides facilities for the development and demonstration of efficient methods of administration and for the training of health personnel in these methods. Successive batches of different types of health personnel will have to be trained if an adequate expansion of health services in the province is to be attempted within a reasonable length of time.

6. From the point of the Institute the advantages are that the centre provides facilities corresponding to a teaching hospital for the field training of the students as well as opportunities for the different sections of the Institute to investigate community health problems and experiments in methods of administration.

7. Another fundamental requirement for organising the teaching of social medicine on sound lines is the provision of an adequate social service attached to the teaching hospital. Such a service does not exist at present anywhere in India. The development of facilities for the training of hospital social workers is therefore urgently required.

8. As regards lectures, 25 hours should be devoted to an introductory course in social medicine, this training being given as early as possible in order to orient the outlook of the student. Perhaps the period which has been designated as a bridge between the pre-clinical and the clinical studies may prove suitable for the purpose. Fifty hours of lectures on public health are recommended for the third year and another week, comprising in all about 25 hours, between the 4th and 5th year, should be devoted to giving the students theoretical instruction regarding community health administration. Thus the theoretical training will total 100 hours.

9. As regards practical training, it is essential that the student should get one month's clerkship in the 4th year in the urban and rural centres together. After the qualifying examination of the total period of one year of internship, at least three months should be devoted to training in public health administration in the two types of centres. In view of the importance of the rural health problem in the country it is desirable that, of this period of internship, at least two months should be spent in the rural training centre. On the other hand, of the proposed clerkship of one month in the fourth year, the period may be equally distributed between the urban and the rural centres.

APPENDIX 30.

Estimates of staff for a medical college put forward by the Goodenough Committee.

General Notes.—(1) The nature of the appointments is indicated as follows:

W.T. (M) .. Whole-time appointment on staff of the medical school.

W.T. (C) .. Whole time service within the teaching centre, although only a part-time member of the staff of the medical school.

P.T. (C) . Part-time teacher of medical school and part-time member of medical staff of the teaching centre.

(2) The estimates are considered reasonable for a school that admits approximately 100 students a year to both the pre-clinical and clinical parts of the course.

(3) As stated in the report a common pattern of staffing for all medical schools would be undesirable. There are bound to be considerable local variations. *The estimates set out below are quoted merely to illustrate the scale of staffing which the Committee considers will have to be aimed at in future. Provision in the various departments not included among these examples should be of an order that will secure a proper balance.*

(4) It has been assumed that there will be a centralization of various services and accommodation, such as animal houses, mechanical and carpentry workshops, photographic and art departments. The technical staff given in the examples below is *exclusive* of technical staff on such centralized services.

(5) The provision for secretary-typists is intended for both medical school and hospital work of the departments.

DIVISION OF PRE-CLINICAL STUDIES.

Department of Anatomy.

Assumption.—The department will be responsible for teaching histology and the morphological aspects of biology, as proposed in chapter 7 of the Report.

1 Professor	W.T. (M) ..	Head of the department.
2 Readers or senior lecturers.	W.T. (M) ..	Normally the two readers will be specialist in those branches of anatomy in which the professor is not a specialist thus, if the professor is an embryologist, one of the readers might be a specialist in neurology and the other in the biological aspects of anatomy and possibly also in histology.
2 Lecturers	W.T. (M).	
Assistant	W.T. (M).	

(It has been assumed that the above will devote approximately half time to teaching and halftime to research).

6—8 Demonstrators ..	W.T. (C) some may be W.T. (M).	The number of demonstrators required will vary according to the amount of time which each person devotes to the department. The estimate of 6—8 is based on the assumption that, on average, each demonstrator will spend 4—5 half-days a week in the department of anatomy, spending the rest of his time in the clinical departments.

1 Teacher of radiological anatomy.	Probably W.T. (C) but part-time (*i.e.* 2—3 half-days a week) in anatomy department.	Preferably this teacher should be on the diagnostic side of the radiology department of the parent teaching hospital.

Technical assistants [all W.T. (M)].

2 Grade A technical assistants	..	One, say, for dissecting room, etc., and the other for histology and embryology.
2 Grade B technical assistants	..	One, say, for biological work and the other for photo-micrography.

3 Grade C technical assistants.
2 Laboratory apprentices.
Cleaners.

[See General Note (4) above].

Secretarial assistance.
1 Secretary-typist .. W.T. (M).

Physiology (Including Biochemistry, Pharmacology and Psychology).

Assumptions.—(1) The department will normally be organised in 3 sub-departments, *viz.* :—(*i*) human physiology; (*ii*) biochemistry (including biophysics); (*iii*) experimental physiology and pharmacology. (In some schools, experimental physiology and pharmacology may form separate sub-departments, while in other schools a sub-department of pharmacology might be associated with one of the clinical departments).

(2) At the head of each sub-department will normally be a professor, reader, or senior lecturer.

(3) One of the professorial heads of the sub-departments will act also as the head of the whole department.

3—4 Heads of sub-departments.	W.T. (M) ..	Each a professor or reader or senior lecturer.
4 Lecturers	W.T. (M) ..	To act as deputies to heads of sub-departments.
8—10 Assistant lecturers, assistants and demonstrators.	A few W.T. (M), the rest W.T. (C).	Distributed among sub-departments as required. As in the department of anatomy most of these teachers may be part-time in the department of physiology and part-time in the clinical departments.

Technical assistants [all W.T. (M)].

1 Grade A technical assistant	..	Distributed among the various sub-departments as required.
3—4 Grade B technical assistants	..	
4—5 Technical assistants in training	..	

Cleaners.

[See General Note (4) above].

Secretarial assistance.
Minimum of 3 Secretary-typists [W.T. (M)].

DIVISION OF PATHOLOGY.

Assumptions.—(1) The division of pathology will normally be divided into 4 departments, viz. :—(*i*) morbid anatomy; (*ii*) bacteriology (*iii*) chemical pathology; (*iv*) clinical pathology.

(2) At the head of each department will be a professor, reader or senior lecturer.

(3) The director of the division of pathology will be the departmental head most suited to administrative work.

(4). The various departments will be responsible for the pathological work of the parent teaching hospital and perhaps also of certain associated teaching hospitals.

4 Departmental heads ..	W.T. (M) ..	Professors, readers or senior lecturers.
4 Lecturers	W.T. (M) ..	One for each department. They will be persons of 4 or more years' experience in their subject.
4 Resident assistants ..	W.T. (M) ..	One for each department. They will be persons who propose to make a career in pathology.
4 Demonstrators ..	W.T. (M)	One whole-time and one part-time for each department. Some may be obtaining experience in pathological procedures before embarking on a carreer in clinical medicine or surgery.
4 Demonstrators ..	W.T. (C)	

In some places additional assistants may be required in one or more of the departments. Additional staff, such as post-graduate trainees in pathology (*i.e.* men who intend to become pathologists but are not yet fitted to be in charge of either routine work or teaching) and special research workers, may be distributed among the departments of the division as may be convenient. Pathologists working with special departments have not been included.

Technical assistants. [W.T. (M)].

	Morbid Anatomy.	Bacteriology.	Chemical Pathology.	Clinical Pathology.
Grade A technical assistant.	1	1	1	1
Grade B technical assistant.	4 (1 for post-mortems. 1 for museum, 1 for teaching, 1 for research.)	1 for media 1 for teaching. 1 for research	1	5 (3 for hospita work, 1 for teaching ; 1 for research).
Grade C technical assisstant.	2	2	2	2
Boy in training ..	1	1	1	1
Cleaners	1	1	1	

[See General Note (4) above].

Secretarial assistance. [W.T. (M)].

Secretary-typist ..	2 (1 for post-mortems and museum).	1	1	1

DIVISION OF MEDICINE.

Department of General Medicine (Including Neurology).

Assumptions.—(1) For the purposes of teaching and research the department will have a whole-time professor of medicine as its academic head, and for teaching and research purposes will be organized on the lines described in chapter 9, paragraph 20.

(2) The department will have 250 beds.

(3) The professor of Medicine will be the academic head of the division of medicine.

1 Professor of medicine	W.T. (M) ..	Academic director of department and physician in teaching centre.
2 Readers or senior lecturer.	W.T. (M) ..	One will be deputy academic director. Each will be a physician in teaching centre.
8 Physicians and assistant physicians.	Most P.T. (C) but some of the junior assistant physicians may be W.T. (C).	It has been assumed that these clinical teachers will normally devote half-time or more to the work of the teaching centre (including teaching and research).
10 Assistants	W.T. (C) ..	Includes grades now some-times called Registrar. Four of the assistants should be resident.
10 Pre-registration house-physicians.	W.T. (C).	

In some medical schools there may be in addition to the professor of medicine other whole or part-time professors in this department, *e.g.*, a professor in neurology.

Technical assistants.

5 Technical assistants of various grades.	W.T. (M) ..	To serve all departments of the division of medicine.

Secretarial assistance.

6 Secretary-typists ..	W.T. (M) ..	To serve all departments of the division of medicine.

[With regard to other departments in the division of medicine see General Note (8) above.]

DIVISION OF SURGERY.

Department of General Surgery.

Assumptions.—(1) For purposes of teaching and research the department will be organized on the same lines as the department of general medicine and will have 250 beds.

(2) Surgical specialities are included except ear, nose and throat and opthalmic departments.

1 Professor of surgery ..	W.T. (M) ..	Academic director of the department and a surgeon in the teaching centre.
3 Readers or senior lecturers.	W.T. (M) ..	Deputy academic directors of department (one may be a reader in experimental surgery).
8 Surgeons	P.T. (C) ..	Devoting half-time to the work of the teaching centre (including teaching and research).
10 Assistants	Some W.T.(C), others P.T. (C).	Some will be resident.
8—10 Pre-registration house-surgeons.	W.T. (C).	

In some schools there may be, in addition to the professor of surgery, other whole time or part-time professors in this department.

Technical assistants. [W.T. (M)].

5 Technical assistants of various grades.	..	To serve all departments of the division.

Secretarial assistance.

6 Secretary-typists ..	W.T. (M) ..	To serve all departments of the division.

[With regard to other departments of the division of surgery see General Note (3) above.]

DIVISION OF OBSTETRICS & GYNAECOLOGY.

Assumptions.—(1) For the purposes of teaching and research the division will have a whole-time professor of obstetrics and gynaecology as its academic head.

(2) The division will have 100 obstetrical and 50 gynaecological beds.

(3) The staff will be responsible for some domiciliary midwifery work, and for the teaching of both obstetrics and gynaecology.

1 Professor	W.T. (M) ..	Academic director.
1 Reader or senior lecturer.	W.T. (M) ..	Deputy academic director.
2 Obstetricians and gynaecologists.	P.T. (C) ..	Will be senior clinical teachers.
6 Assistants	W.T. (C) ..	This number is desirable if the division is to train future specialists.
7 House-surgeons ..	W.T. (C). ..	

[One of the senior staff and one of the assistant physicians on the staff of the department of child health will be associated with the division of obstetrics and gynaecology in respect of the care and management of new-born infants.]

Technical assistants. [all W.T. (M)].

3 Technical assistants of various grades.

Secretarial assistance.

3 Secretary-typists .. W.T. (M).

APPENDIX 31.

Draft courses for the Bachelor of Dental Surgery Degree.

The degree of Bachelor of Dental Surgery shall be awarded to a candidate who having passed the Intermediate examination in Science of an approved University with Physics, Chemistry and Natural Science as the subjects of study has put in attendance at approved courses of study for a period of not less than four years. There shall be four examinations, 1st, 2nd, 3rd and Final professional examinations for the B. D. S. The examination shall be written, Oral and Practical. The subjects covered in the different years of study shall be as follows :—

Four years' B. D. S. Course.

(Open to students who have passed the F.Sc. Examination medical Group, or equivalent examination).

FIRST YEAR.

(*a*) Lectures :—

1. Human Anatomy.
2. Human Physiology with Histology.

(*b*) Practical :—

1. Dissections and Anatomical Demonstrations in Anatomy.
2. Practical Physiology with Histology.

First Professional B. D. S. Examination in Anatomy and Physiology with Histology.

SECOND YEAR.

(*a*) Lectures :—

1. General and Dental Materia Medica.
2. General Pathology and Bacteriology.
3. Medicine.
4. Surgery.
5. Human and Comparative Dental Anatomy, Physiology and Dental Histology.
6. Junior Dental Prosthetics.

(*b*) Practical :—

1. Elementary Pharmacy and Demonstrations in General Materia Medica.
2. Practical Pathology and Bacteriology.
3. General Hospital Practice with instructions in Clinical Medicine and Surgery in the Hospital.
4. Practical Dental Histology.
5. Dental Prosthetics Laboratory Instructions.

Second Professional B. D. S. Examination in General Pathology and Bacteriology, Human and Comparative Dental Anatomy, Physiology and Dental Histology and General and Dental Materia Medica.

THIRD YEAR.

(*a*) Lectures :—

1. Medicine.
2. Surgery.
3. Dental Surgery and Pathology with Dental Bacteriology.
4. Senior Dental Prosthetics. Crown and Bridge Prosthesis.
5. Dental Metallurgy.
6. Operative Dentistry.

(*b*) Practical :—

1. General Hospital Practice with instructions in Clinical Medicine and Surgery in the Hospital.
2. Practical Dental Pathology and Bacteriology.
3. Dental Prosthetic Laboratory Instructions.
4. Junior Tutorial Practical Class in Operative Technique.
5. Dental Hospital Practice.

Third Professional B.D.S. Examination in Medicine, Surgery, Dental Surgery and Pathology with Dental Bacteriology.

Fourth Year.

(*a*) Lectures :—

1. Oral Surgery and Anaesthetics.
2. Orthodontia.
3. Dental Radiology.

(*b*) Practicals :—

1. Clinical Demonstrations in Orthodontia, Dental Radiology and Dental Surgical cases.
2. Dental Prosthetic Laboratory Institutions,
3. Senior tutorial Practical Class in Operative Technique.
4. Dental Hospital Practice.

Final Professional B.D.S. Examination :—

Part A :—

1. Dental Prosthetics including Crown and Bridge Prosthesis.
2. Dental Metallurgy.

Part B :—

1. Operative Densitry and Dental Radiology.
2. Oral Surgery and Orthodontia.

APPENDIX 32.

Syllabus for the 'Diploma' course in Pharmacy.

Admission requirements, etc.—Matriculates or candidates with equivalent qualification will be eligible for admission to this course. Students with additional training in mathematics and science subjects will be given special preference at the time of admission. The candidates must be not less than 15 years of age at the date of admission. The Matriculation certificate or a certificate from the head of the institution in which the candidate last studied will alone be accepted as evidence of age.

Persons who have passed the Compoundership Examination under the State Medical faculty of Bengal may join the Diploma in Pharmacy Course, if desired. Such students will be required to undergo training for one year only. The course of studies and special exercises which they will have to take will be decided by the Pharmaceutical Council that will be created, subject to the final sanction of the local Government.

Terms, lectures, etc.—The course of study will be for two years. A year shall be split into two terms of four and half months each, inclusive of holidays, for theoretical lectures and practical work in the institution. The last three months of the year shall be set apart for practical work either in recognised drug stores, hospitals, or manufacturing firms (apprenticeship period). If this cannot be arranged, this period may be spent in the college laboratory doing special practical exercises under the guidance of teachers. The first term may be fixed from 1st July to 14th November and the second term from 15th November to 31st March. The apprenticeship period will therefore fall from the 1st April to 30th June of each year.

Every lecture shall cover a period of not less than 45 minutes inclusive of time allowed by the college rules for the assembling of the students. A period of practical work or class exercise or class examination of not less than 45 minutes shall be considered to be equivalent to a lecture.

No student shall be considered to have prosecuted a regular course of study in any subject for an examination unless he has attended at least 75 per cent. of the lectures delivered in that subject.

The candidates must maintain laboratory note-books for all practical classes which shall be examined and marked by the examiners. The note books must be signed at frequent intervals by the Professor under whom the candidates work.

Class examination, etc.—The candidates shall be required to pass an examination in each term which will generally be held in the last week of each term and shall consist of written, oral and practical examinations in which due consideration shall be given to the credits obtained by the examinees during their whole sessional work. A student failing to pass in two subjects in a term will not be promoted to the next higher class. For those who fail in one subject only, a provisional promotion to the next higher class may be permitted, provided he submits to a fresh examination in this subject during the period of the second term. Fresh attendance at theoretical lectures and practical demonstrations need not be insisted upon unless the candidates have also failed in the practical part of the test examination or have proved themselves particularly backward in sessional work. A candidate who has secured the minimum pass marks in sessional work in

any subject at any examination, if re-appearing at the same examination in any subsequent term, may have his previous pass marks in the sessional work in that subject re-credited to him.

Final examination.—The final examination shall be conducted under the auspices of a Board authorised to grant the diploma. The examination shall be held twice a year and shall consist of written, oral and practical examination. Sessional work will also be taken into consideration. Diploma will be granted after passing the final examination and on satisfactory completion of at least two apprensticeship terms in a recognised institution to be decided upon by the "Pharmaceutical Council".

A candidate who fails to pass the final examination may be admitted to one or more subsequent examination provided that he has attended a fresh course of instruction to the satisfaction of the Principal of the college. After four failures, a candidate shall not be admitted to any further examination.

Curriculum for the Diploma in Pharmacy Course, showing the distribution of subjects to be taught in each term, and the number of lectures and practical classes.

	Theoretical classes per week (hours).	Practical classes per week (hours).
First year—First term :		
1. Biology— (*i*) Botany	2	4
(*ii*) Zoology	2	4
2. Physics	2	2
3. Inorganic Chemistry	2	2
4. Anatomy and Physiology	4	4
5. Pharmaceutical Arithmetic	1	..
Total	13	16
First Year—Second term :		
1. Physics	2	2
2. Inorganic Chemistry	2	2
3. Theory and Practice of Pharmacy	4	4
4. Pharmaceutical Latin	1	..
5. Hygiene, First Aid and Dressing :		
(*i*) Hygiene & Sanitation	2	..
(*ii*) First Aid	2	2
(*iii*) Dressing	1	2
Total	14	12
Second Year—First Term :		
1. Organic Chemistry	4	4
2. Pharmacognosy	3	4
3. Theory and Practice of Pharmacy	2	2
4. Despensing Pharmacy	2	4
5. Forensic Pharmacy	2	..
6. Pharmaceutical Economics	3	..
7. Quantitative Analysis	..	8
Total	16	22

	Theoretical classes per week (hours).	Pretical classes per week (hours).
Second year—Second Term.		
1. Pharmaceutical Chemistry	4	6
2. Theory and Practice of Pharmacy	4	8
3. Dispensing Pharmacy	2	4
4. Pharmacognosy	3	4
5. Materia Medica, Pharmacology and Toxicology	4	..
Total ..	17	22

The two-year curriculum for the Diploma in Pharmacy Course Showing the number of Lectures and Practical classes required.

	Lecture hours.	Lab. hours.	Total hours.
Biology (*i*) Botany	25	30	55
(*ii*) Zoology	25	30	55
Anatomy and Physiology	60	30	90
Physics	60	60	120
Inorganic Chemistry	40	60	100
Qualitative and Quantitative Analysis, including clinical examination of urine	..	120	120
Organic Chemistry	60	60	120
Theory and Practice of Pharmacy (including Pharmaceutical Technique and Operations, Examination of Pharcopoeial substances, etc.)	150	150	300
Dispensing Pharmacy	60	120	180
Pharmacognosy	50	90	140
Pharmaceutical Chemistry	80	60	140
Pharmaceutical Latin	20	..	20
Pharmaceutical Arithmetic	20	..	20
Pharmaceutical Economics	20	..	20
Forensic Pharmacy	30	..	30
Hygiene, First-Aid and Dressing—			
(*i*) Hygiene & Sanitation	30	..	30
(*ii*) First-Aid	30	30	60
(*iii*) Dressing	15	30	45
Materia Medica, Pharmacology and Toxicology ..	60	..	60
Total ..	835	870	1,705

Note :—The " Syllabus " is intended to indicate the subject matter that may be profitably taught, the minimum amount of time that should be spent in presenting such material to the students and the examinations that should be conducted to test the professional and applied knowledge of the candidates. It is not designed to interfere with any flexibility in course of study or freedom in methods of instruction as may be thought fit by the teaching staff.

APPENDIX 33.

Syllabus and entrance requirements for the proposed Diploma in Public Health Engineering.

The course will consist of academic instruction and demonstrations for 8 months or 1,150 working hours, followed by an examination, and 6 months of assigned practical training at selected centres. In the case of candidates not already in services, the practical training will be extended to 1 year. The candidate will be awarded a degree or diploma such as M. Sc. (Public Health Engineering) after satisfactory completion of practical training.

Admissions should be restricted to Engineers between the ages of 25 and 40, already engaged in the Provinces and States of India, industrial organisations, municipalities and corporations, on works related to public health,—such as water supplies, sewage works, refuse disposal, housing, malaria, control, etc. Applicants should be carefully selected, should possess a degree in engineering as proof of a theoretical background and should be recommended by their employers for the special course. They should be given leave and other facilities. They should be guaranteed security of their position.

SYLLABUS.

The course will include the study of eight compulsory subjects and one of three optional subjects.

COMPULSORY SUBJECTS.

1. *Sanitary bacteriology.*—Bacterial environment, metabolism, carbon and nitrogen cycles. The role of bacteria in disease. Collection of samples of water for bacteriological examination. Bacteriology of water, sewage, soil, air, milk, etc. Sterilisation.

Approximately 14 lectures and 30 hours practical.

2. *Sanitary biology.*—Algae, fresh water biology, typical organisms of sewage, sludges, activated slugde, trickling filters, etc. River pollution and beach pollution and their effects. Life of animals and insects concerned in the transmission of important diseases. Disinfection, fumigation, disinfestation. Elementary physiology and nutrition.

Approximately 48 lectures and 30 hours practical.

3. *Epidemiology and Public Health Administration.*—Origin and spread of the more common diseases such as malaria, smallpox, cholera, typhoid, plague, typhus, influenza, tuberculosis, etc. Relation between environment and health. Personal hygiene and prophylaxis. Organisation and administration of public health in India and elsewhere. Port health and quarantine.

Approximately 45 lectures and 30 hours practical.

4. *Statistics.*—General and vital statistics. Application of statistics to engineering problems of rainfall, run off, floods, population growth, sewage and water treatment.

Approximately 25 lectures and 40 hours practical.

5. *Water supply and sewerage.*

(*a*) *Water Supply.*—Design of projects of various types. Methods of preliminary investigation of new projects. Estimates of requirements of water, and the development and conservation of various types of sources of water supply. Rainfall, runoff, and yield of catchments. Statistical analysis of data of estimation of minimum yield, maximum floods, etc.

Ground water. Relation between geology and water supplies, Yield and development of wells and tube wells. Design and construction of river intakes, storage works, clear water and service reservoirs, balancing tanks, stand pipes, pumping stations, etc. Design of pumping plant, air lift systems, etc. Distribution systems, pressures and capacity. Specification and construction of water works ; pipe lines and anciliaries. Pumping. Hot water supply. Economics and maintenance of water works.

(*b*) *Drainage and sewerage.*—Design and investigation of sewerage and drainage projects. Estimation of sewage, infiltration of ground water and storm water from data on population, soil, intensity and duration of storms, etc. Hydraulics and design of separate and combined sewers and drains, syphons, separators, manholes, silt pits, etc. Ventilation, cleansing and maintenance of drains and sewers. Design of sewage pumping stations and equipment.

Approximately 100 lectures and 200 hours practical.

6. *Theory of water purification and sewage treatment.*—Wholesome water. Standards for public and industrial use. Quality of water and sewage. Chemical and bacteriological analysis and their significance. Biochemical oxygen demand and its determination. Principles of sedimentation, coagulation, control of algae, filtration, aeration, taste and odour control, disinfection of water and sewage effluents. Water softening. Corrosion control and incrustation control. Removal of iron, manganese, etc. Sedimentation of sewage. Anaerobic digestion of sludge. Sludge gas collection and utilisation. Activated sludge process. Trickling filters. Stability tests for sewage effluents and determination of their strength. River pollution problems. Analysis and specifications of chemicals used in water purification and sewage treatment. Manurial value of sewage. Dilution and irrigation. Elementary analysis of gases.

Approximately 40 lectures and 60 hours practical.

7. *Design of water purification and sewage treatment plants.*—(*a*) Design and construction of structures for screening, aeration, chemical treatment, (coagulation), rapid and slow sand filtration, disinfection, softening, deferrisation etc. Water laboratories.

(*b*) Design and construction of structures for screening, grit removal, sedimentation and skimming of septic, Imhoff, sludge digestion and humus tanks ; trickling filters, contact beds, activated sludge plants, sludge drying beds, vacuum filters etc. Disposal of effluents on land and in waters. Estimating river pollution and safe loads for self purification. Sewage laboratories.

Approximately 100 lectures and 130 hours practical.

8. *General sanitation.*—(*a*) Street cleansing, refuse collection and disposal by various methods, including incineration and composting.

(*b*) Ventilation, air conditioning, heating, cooling, noise and dust control, smoke abatement. Methods of air and gas analysis, dust counting etc.

(*c*) Principles of village and town planning, zoning, healthful housing, and slum clearance.

(*d*) Type plans, construction and sanitation of hospitals, schools, slaughter houses, dairies, food and drink establishments, markets, eating establishment, swimming pools, disinfector stations, etc. Rat proof and fly proof and mosquito proof construction. Sanitary survey and reporting.

(*d*) Rural sanitation problems. Latrines and trenching grounds.

Approximately 40 lectures and 70 hours practical.

Optional Courses (of which one is to be selected).

1. *Malaria engineering.*—Life history and habits of vectors. Malaria surveys. Recurrent, naturalistic, and permanent methods of controlling larvae and adult mosquitoes. Design of antimalarial drains in various circumstances. Canalisation. Flushing. River training. Clearing. Sub-soil drainage. Filling. Adult spray killing methods. Construction of sprays. Preparation of larvicides and insecticides. Screening of houses. Relation between engineering construction, irrigation and malaria. Malaria control for engineering projects, etc.

Approximately 25 lectures and 75 hours practical.

2. *Industrial Hygiene.*—Elementary physiological hygiene. More detailed class and laboratory instruction on ventilation, air conditioning, dust, smoke and fume control, occupational risks, abnormal atmospheres, safety measures, comfort, etc.

Approximately 25 lectures and 75 hours practical.

3. *Disposal of industrial wastes.*—Nature and treatment of wastes produced at various stages in the leading industries in India, such as textiles, paper, brewing, tanning, dyeing, metals, etc., etc.

Approximately 40 lectures and 60 hours practical.

Practical training for the degree of Master of Science in Sanitary Engineering.

The academic instruction for 8 months proposed for this course will be supplemented by practical training as in the case of other branches of engineering in order to give the student a real insight into some of the actual problems awaiting him, and the prevailing engineering practices, whether they are modern or out-of-date.

The practical training will consist generally of the following :—

(1) Engineering and Sanitary investigation of projects—for water supplies, improvements etc. for drainage, sewage purification etc. for 25 working days.

(2) Design, drawing and estimating for such projects for 25 working days.

(3) Actual construction of sanitary works—water supplies, sewage works, refuse disposal plants, markets, hospitals etc.—for 25 working days.

(4) Operation and maintenance of water purification plants, sewage treatment plants, refuse treatment plants, laboratory control of plant operation etc.—for 25 working days.

Additional training may be given in the optional subjects, or the training outlined above may be intensified or prolonged at the option of the candidate or of the Director of the Institute.

The training may be arranged with the public health engineering departments of the Governments of Madras, Bombay, Delhi, Punjab, United Provinces, Bengal and Mysore, or with Corporations of Madras, Bombay, Karachi and Calcutta or at Tatanagar or Hyderabad (Deccan). In each case the Director of the Institute will negotiate and arrange details to ensure the right type of training and supervision. Students will be consulted and assigned to their own provinces for training if possible. In special circumstances, a student who is employed already on important public health engineering works may be allowed to count his service towards such practical training.

During the period of practical training students must work under the administrative control of the officers to whom they are assigned, and observe all the disciplinary rules in force. They must submit a report on their work and a record of their attendance through the respective officers under whom they may be undergoing training. The officers will also report confidentially to the Director, about the work of the trainees. Besides, the Professor of Sanitary Engineering may, if he wishes, inspect the work of the students during their training.

When the practical training prescribed or approved for each student has been satisfactorily completed, the Director will recommend the award of the degree to the student.

APPENDIX 34.

Course in Public Health engineering for engineering students qualifying for a degree in Engineering.

I. *Introduction.*—Engineering operations must be carried out without endangering public health. The best way to ensure this will be by providing elmentary instruction on the essential principles of health, the causation of disease, the relation between engineering construction and public health, and the ways in which the engineer can cooperate with the health organisation in the ordinary course of his duties.

The present graduate course in engineering is already overburdened and involve the applications of basic scientific principles in various fields. Sanitary engineering is taught only to civil engineers, mainly as the application of the principles of hydraulics in the field of water supply, drainage and sewerage. It occupies a minor place in the curriculum leading to a Civil degree. It cannot be called public health engineering, though it is the nearest approach to it.

II. *Scope and weightage to be allotted to the course.*—It is obviously impossible to teach public health engineering in detail, but every engineer and subordinate may be given instruction in elementary public health principles through lectures for about 30 hours in the class room and demonstrations for 50 hours, without seriously overburdening the course. There must be a separate paper on public health engineering for all engineering students, carrying 5 to 8% of the total marks in the final examination.

III. *Syllabus.*—The syllabus may be as follows :—

	Lecture. hrs.	Demonstrations. hrs.
A. *Introductory* :		
Scope of public health and sanitation, Evolution of modern public health, ancient and modern theories	1	--
Elementary physiology and nutrition	2	4
B.—*Communicable Diseases* :		
Bacteria,—their biology, environment, metabolism, functions in nature's economy-carbon and nitrogen cycles, etc. ..	2	8
Infection, contagion, transmission, incubation, contacts, carriers, immunity, epidemics and endemics	1	--
Cholera, typhoid, dysentery	1	--
Smallpox, vaccination, vaccines, viruses, colds, influenza ..	1	..
Plague	1	..
Malaria, yellow fever, dengue	1	..
Hook worm	1	2
Tuberculosis	1	2
C. *Entomology* :		
Mosquitoes	1	2
Flies	1	2
Rats and fleas, lice	1	2
D. *Application* :		
Personal hygiene	1	..
Water, water purification, sanitary aspects	2	4
Sewage, sewage purification, latrines	2	4
Air, ventilation, dust, smoke, fumes and lighting	2	4
Refuse collection and disposal, fly control	1	3
Disinfection and disinfestation	1	2
Food and milk, dairies, refrigeration, boiling, preservation, handling and transport, restaurants	2	3
Malaria control	2	4
Malaria and engineering construction	1	2
Hygiene of housing	1	2
	30	50

IV. *Position of this subject in the General Course.*—The best time to teach this course will be at the end of the 3rd year, or in the first term of the final year. The course requires only 16 additional working days and may actually be spread over a period of two months, allotting 2 hours every day for public health engineering during those 2 months. There are a number of holidays in the ordinary College term, and it will be possible to cut down these holidays by 16, or to give special evening classes. Thereby, no part of the regular engineering instruction need be omitted. But the course must form an integral part of the curriculum, and candidates must obtain a pass in this subject to qualify for the degree or diploma.

The instruction may be given by visiting lecturers if there is no competent person in the faculty of the College to teach any subject. Care must be taken to emphasise the engineering implications, not the clinical aspects.

APPENDIX 35.

A short course of training in public health engineering for engineering supervisors in small municipalities.

I. *Length of Course.*—The course may consist of academic instruction for 3 months, followed by assigned practical training for 3 months so as to meet their actual needs, on which the students will report in detail.

II. *The Curriculum may be as follows* :

	Hours.	
	Lectures.	Lab.
A. *Introductory.*		
Scope of public health and sanitation, ancient and modern theories	1	—
Elementary physiology and nutrition	3	6
B. (*a*) Elementary bacteriology, environment, biology, metabolism and functions of bacteria. Bacteria of water, sewage, milk, air, soil, use of microscope	6	15
(*b*) Biology of water purification and sewage disposal, river pollution, fish life, etc.	3	6
(*c*) Entomology—Mosquitoes, flies, rats, fleas, ticks, lice, sandflies, ankylostoma	7	14
(*d*) Chemistry of water purification and sewage treatment, including disinfection	6	12
C. *Communicable diseases.*		
Malaria, yellow fever, dangue	1	4
Plague	1	
Cholera, typhoid, dysentery	1	
Hookworm	1	
Tuberculosis	1	
Pneumonia, influenza	1	
Smallpox, chickenpox, etc.	1	
Epidemics and epidemic control	1	
Public health administration	1	
D. *Statistics.*		
General statistics, mean, standard deviation, rates, etc.	7	14
E. *Application.*		
Hydraulics	5	15
Water supply and purification, design, etc.	10	30
Latrines, sewerage, sewage disposal, drainage, refuse disposal, plumbing	10	30
Food and milk preservation, transport, handling, restaurants, markets, slaughter houses, etc.	3	9
Townplanning, zoning, housing, lighting, ventilation, dust control, factories, etc.	4	8
Malaria control	6	12
Rat control, fly control, rural sanitation, fairs and festivals, disinfection, etc.	5	10
	85	185

At the end of 3 months theoretical instruction, an examination will be held consisting of 2 written papers (one for parts A, B, C, D and the other for part E) and a practical test. The candidates who pass these will proceed to their practical training and report on it. If their work is satisfactory and their report shows capacity to deal with the problems that may face them, they may be awarded a " Certificate in public health engineering ".

APPENDIX 36.

Curriculum of Studies for Sanitary Inspectors.

Subject.	Hours.
I.—*Introductory.*	
Scope of public health, sanitation, hygiene	1
Evolution of public health—modern public health methods	
Duties and obligations of a sanitary inspector—attributes essential for success	1
II.—Elementary physiology	8
Personal hygiene	2
III. *Communicable diseases.*	
Infection, modes of transmission, channels of infection, incubation period; quarantine, contacts, carriers; missed cases, preventive measure	
Information about epidemics—Investigation, isolation, surveillance, disinfection.	
Epidemic and endemic diseases	1
Smallpox, vaccination	2
Cholera, inoculation	2
Typhoid, dysentery	2
Chickenpox, measles, mumps, whooping cough, diptheria	2
Hookworm and hookworm treatment	2
Malaria	2
Leprosy, syphilis	1
Management of an outbreak of infectious diseases	1
Taking of specimens for bacteriological examination in plague, cholera, typhoid, rabies	1
IV.—*Animals, insects, etc., carrying disease.*	
Mosquitoes, anopheles.	
Flies.	
Rats and fleas.	
Bed bugs, lice	4
V.—*Disinfection and disinfestation.*	
Water supplies.	
Concurrent and terminal disinfection in infectious diseases	3
Fumigation in plague work.	
VI.—*Surveying and levelling and drawing.*	
Chain survey, plane table, field sketching.	
Levelling, drainage.	
Drawing plans, sections, scales, enlargement reduction, reproduction	4
VII.—*Building construction.*	
Building materials.	
Building construction.	
Village and town planning.	
Estimating.	
Execution of works.	
Type plans.	
Ventilation, lighting, etc.	8
VIII.—*Water supply.*	
Sources, conservation.	
Sinking of wells and tube wells, repairs.	
Purification—settlement, filtration, disinfection.	6
Collection of samples.	11A

Curriculum of Studies for Sanitary Inspectors—contd.

Subject.	Hours.
IX.—*Collection and disposal of excreta and refuse.* Latrines—different types. Soakage pits, urinals, catch pits. Septic tanks and title fields. Manure pits. Trenching. Refuse collection, organisation and methods. Composting, dumping	1
X.—*Disposal of the dead*	1
XI.—*Collection of vital statistics.* Machinery, population, census, rates, tabulation, infant mortality rates	4
XII.—*Food and milk sanitation.* Nutrition. Milk, dairies, slaughter houses, markets, sampling of food and milk ..	8
XIII.—*Fairs and festivals*; sarais, dharmasalas, Layout, water supply, latrines, refuse collection and disposal, control of animals and food establishments, control of communicable diseases, accommodation, cleaning up at end of festival, police. Sarais, dharamsalas, choultries	3
XIV.—*School sanitation*	1
XV.—*Public Health Administration.* Local and provincial set up. Relations with other departments	2
XVI.—*Public health laws*	6
XVII.—*Health Education methods.* Their importance in rural work. Personal contact, discussions, village and school talks, lantern, cinema, leaflets, press articles, exhibitions and type plans and models. School health procedures	4
XVIII.—*Health Unit work*	3
XIX.—*Malaria control.* Minor drainage and filling. Larval control by oiling and parisgreen. Adult spray killing. Malaria and irrigation. Naturalistic methods	4
XX.—*Office routine*	2
XXI.—*Methods of inspection and carrying out of Sanitary surveys.* Rural latrines, trenching grounds, wells, markets, slaughterhouses, offensive trades, camps, water supplies, reporting, carrying out repairs	12
XXII.—*Maternity and Child Welfare*	2
XXIII.—*Legal procedures.* Framing charges, evidence, etc.	6
XXIV.—*Sewerage and sewage disposal, plumbing*	6
XXV.—*Offensive trades, industrial hygiene*	2
XXVI.—*Ventilation, atmospheric pollution*	3
Seminars, tests, etc.	10
Total ..	140

Demonstrations and Exercises as Detailed.

	Hours.
1. Bucket latrine	
2. Deep pit latrine	
3. Bored hole latrine	
4. Mound latrine	
5. Water seal plate latrine	4
6. Public latrine	
7. Squatting plates	
8. Urinals	
9. Septic tanks	
10. Markets	
11. Meat stalls	1
12. Dairies	2
13. Gala cartstand	2
14. Slaughter house	2
15. Offensive trades, Lime kiln	1
16. Tanneries	1
17. Wells, tube wells	3
18. Disinfection of wells	4
19. Disinfection of tanks	
20. Chlorination of water	2
21. Trenching ground	2
22. Catch pits and sealed pits ..	1
23. Compost making	1
24. Refuse destructor	3
25. Camp incinerators	
26. Water sample for analysis ..	2
27. Milk sample for analysis	1
28. Hookworm treatment	2
29. Vaccination against smallpox ..	4
30. Vaccination against typhoid and cholera ..	4
31. Widal test	1
32. Preparation of vaccine	2
33. Pasteur treatment and despatch and examination of brain for rabies in dogs	2
34. Housing	4
35. Disinfection of a house	
36. Insanitary and obstructive buildings	
37. Aerated water factories	1
38. Barbers' shop	1
39. Laundries	1
40. Maternity and child welfare clinics	2
41. Visit to health museum	4
42. Infectious disease hospital ..	4
43. Leprosy clinic	1
44. Blood for malaria	1
45. Specimens of faeces for hook worm infection	1
46. Dissection of rats for plague ..	1
47. Antimalaria measures	6
48. Cemetery	1
49. Sewage farm	2
50. Sanitary Assistant's office	
51. M. O. H.'s office ..	3
52. Midwife's office	1
53. Birth and death registration ..	2
54. Tabulation of vital statistics ..	2
55. School sanitation	1
56. Health education procedure ..	6
57. Mosquito surveys	3
58. Calcid fumigation	3
59. Office routine	2
60. Court procedure	3
61. Water purification plant	6
62. Fairs and festivals	6
	115

Exercises.

		Hours.
1.	Construction of squatting plate	10
2.	,, pit latrine	2
3.	,, borehole latrine	7
4.	,, bucket latrine	5
5.	,, sealed pits	2
6.	,, catch pits	3
7.	,, water seal latrine	6
8.	,, public latrine	2
9.	,, urinals	
10.	,, wells	14
11.	,, tube wells	
12.	Disinfection of water and test for efficiency	6
13.	Sanitary inspection of eating house	2
14.	Bakeries	2
15.	Markets	2
16.	Meat stalls	2
17.	Fish stalls	2
18.	Dairies	2
19.	Cartstands and shandies	2
20.	Grain stores	2
21.	Slaughter houses	2
22.	Offensive trades : Tanneries, Lime kiln and Brick kilns	6
23.	Laundries	1
24.	Trenching ground	3
25.	Compost making	6
26.	Manure pits	2
27.	Incinerator	6
28.	Water sample for analysis	12
29.	Milk sample for analysis	2
30.	Preparation for mass Hookworm treatment	3
31.	Technique of vaccination against smallpox	30
32.	Technique of vaccination against cholera	30
33.	Blood for widal	4
34.	Sample of dog's brain for examination for rabies	4
35.	Housing with regard to Housing laws	8
36.	Cooly lines and temporary labour camps	6
37.	Disinfection of a house and articles within	4
38.	Insanitary buildings	4
39.	Obstructive buildings	4
40.	Barber's shop	2
41.	Aerated water factories	2
42.	Health centres	4
43.	Leprosy clinic	2
44.	Taking blood samples for malaria	6
45.	Taking specimen of faeces for examination	4
46.	Rat dissection	4
47.	Cemetery and cremation ground	4
48.	Sewage farm	4
49.	School health survey	2
50.	Health Survey of village, sarais, dharamsalas	3
51.	Mosquito larval survey	4
52.	Court procedure	3
53.	Plumbing	4
54.	Water supplies, chlorination testing, etc.	8
55.	Sewage	8
56.	Sewage disposal—several types	12
57.	Court procedure	9
58.	Food samples	2
59.	Smoke and other nuisances	
60.	Inspection of factories	6
61.	Restaurants	2
		305

Exercises—contd.

	Hours.
62. Street celeansing 63. Refuse collection in towns	6
64. Sanitary survey of slums, houses, water supplies	18
65. Plans and drawings	18
66. Enlargement and reduction	6
67. Sketching	6
68. Estimating	6
69. Surveying	18
70. Field sketching	12
71. Building construction	6
72. Malaria control and drainage	18
Total	419

APPENDIX 37.

Syllabus for Preliminary Training Course for Nurses

Age for admission to be not less than 17 years.

The best education available at any stage of development in a country is the only standard that should be accepted for nursing. A lack of educated girls, however, is only part of the problem, the real problem is how to attract the best there are at level of education available. The best educated and most intelligent will be attracted to the nursing course in proportion to its immediate interest, and to its future opportunities for remunerative work, in a profession of good standing in the community. The nursing course can be made of interest only if it is carefully correlated with the existing educational backgrounds of the students, and realistically linked to community and home conditions, and also presented in a sympathetic atmosphere of student—teacher relationship throughout the course rather than in an atmosphere of reproof to an ignorant and unskilled employee. With such safeguards, despite low standards of education and correspondingly simple professional training, the best students available at the time will be attracted and will make a real contribution to the Health Services in hospital and in the community.

The basic preliminary course (syllabus given) is intended to incorporate these ideas and instil a preventive approach to health from the commencement. Furthermore, this basic course so planned will provide those students who do not continue through the full professional course, valuable experience, immediately applicable to take back with them to their own homes and villages, and will likewise make them influential in increasing the number of desirable applicants for instruction.

Length of Course.—The course should not be less than 14 weeks—13 weeks for studies and 1 week for examination. This permits of 3 sessions annually, allowing 10 weeks for transfers and admission of students, and holidays for teaching staffs.

Hours.—Approximate hours per week 34, allowing for Saturday afternoon and Sunday free.

Staff.—It is suggested that the Sister Tutor in charge of this School should hold the necessary qualification for teaching in addition to Certificate of General Nursing.

If the number of students demand an assistant tutor, the minimum qualification of such assistant should be Registered Nurse with practical experience in hospital and ward administration and capable of contributing her full share to the general work of the School.

Salaries for teaching staff—

Senior Sister Tutor—Rs. 200—10—250 p.m.

Assistant Sister Tutor—Rs. 150—5—200

and in addition both should receive—free furnished accommodation, messing, uniform and dhobi allowance and service.

Lectures.	Hours.	Practical Demonstration.	
Group :			
I. Elementary Anatomy and physiology Elementary Biology	35	Study Class and Laboratory work	60

Group.	Lectures	Hours	Practical Demonstration	
II.	Introduction to Preventive Medicine—Personal and Environmental Hygiene—Principles and Practice of Health teaching. Introduction to General Psychology	20	Students Health Examinations Records—Visits to Water works—Sewage Farms—demonstrations of samples of disinfectants—Elementary Bacteriology—Inoculation—Vaccination, etc.	40
III	.. ..		Physics and Chemistry	10
IV.	Elementary Dietetics ..	20	Practical cookery—Diets for Health adults and children	20
V.	Nursing—1st year group lectures, including simple nursing procedures—First Aid—Home Nursing Bandaging	30	Bed making—Bathing of patients. Taking Temperatures—Pulse, Respiration—Writing up charts—Noting record of cases—General Methods of cleaning wards, Equipment, etc., Preparation for simple nursing procedures—Preparation and method of giving enema to adults and children. Administration of medicine. Supervised visits to hospital—wards ..	100
VI.	Elementary Economics & Social Science. Social Service —Different types of (*a*) Community Organisations—Societies—Institutions, General and Social Hospitals. (*b*) The family ..	15	Visits to Bustees, village homes & markets—Town markets—Dairies —Co-operative Societies—Labourers Tenements—Middle Class Flats—Orphanages—Voluntary Social Agencies	40
VII.	Physical Culture	..	Gymnastics—Team games, Folk dances, etc.	18
VIII.	Child Development—Care of	8	Visits to Infant Welfare Centres & Schools—prevention of blindness in new born	10
IX.	Elementary Domestic Science including needle work—Laundry—Gardening, vegetables, fruit, flowers, etc.	15	In the Class	18
			In the Garden	18
	Total ..	143	Total ..	265

MICROBIOLOGY, (INCLUDED IN ELEMENTARY BACTERIOLOGY.

(Group II of Preliminary Training School Syllabus Attached).

Unit 1.

Micro-organisms and their relation to man —helpful & harmful.

Yeast and moulds—seere formation, biological activity; requirements for life and growth importance to man in food production, industry medicines such as ergot, etc.

Bacteria, reproduction, biological activity; destruction; general picture of bacteria in the normal healthy human body, basis of classification, staining and identifications, Disease production; the effect of the bacteria and their toxins on the body.

Unit 2.

Where pathogenic organisms are found and how infection is spread.

Sources of infection in dirt, water, food, air on body discharges.

Unit 1.

Introduction to the use of the microscope—examination of simple objects easy to see such as a drop of milk, salt, crystal, hair, etc.

Examination of prepared slides of yeasts, moulds, and bacteria of different varieties.

ote books to be kept and drawing to be made of each slide examined.

Unit 2.

Examinations under the microscope of fly's leg, village water supply, culture made by student, breathing on media, touching media, throat and mouth culture, from members of the class.

Modes of transfer—direct—drop air borne, carriers, human, insect, animals.

Unit 3.

Control and destruction of micro-organisms. The effect of the environment on the life of micro-organisms. Moisture, food, temperature, light, Oxygen.

Disinfection, sterilization, fumigation, sepsis, antesepsis and asepsis, their use in the hospital and in the home. Stress on the dangers and results of carelessness.

(If possible simple demonstrations of this kind to be shown to hospital in-patients and relatives by students and health teaching given.)

Unit 3.

Simple experiments to show the effect of common physical and chemical agents on micro-organisms, such as sunlight, heat, cold, drying, iodine, alcohol, etc.

Tests for sterility of things which have been sterilized and kept.

APPENDIX 38.

Syllabus for the Junior Nursing Certificate.

Length of course 3 years, age for admission 17 years.

40 Lectures & Lecture demonstrations to be given by a certificated nursing sister. Institutional & Domicilary methods should be taught through the entire course.

Revision classes during first year for students who have passed through the P.T.B. Full lectures for other students.

Hospital Ethics—Etiquette Qualifications essential to the making of a good nurse. Maintenance of health, uniform, General rules of the hospital and nurses home.

The ward its cleanliness, brightness, tidiness, ventilation, care of lavatories, bathrooms, sluice-rooms, utensils—their care and cleanliness.

Hospital equipment—its cost, care, Dressings,—Kinds, uses, costs. Rubber appliances—care and preservation of mackintoshes. Air and Water beds. Hot water bottles—care, filling, precautions, Linen—care of, checking, Inventories.

Bed—beddings, care, disinfection. Bed making. Type of beds Changing of linen—methods. Nursing positions. Lifting of patients. Giving of bed-pans, etc.

Patients—admission—how to receive. Preparation for stretcher case. Fractures. Collapse. Hæmorrhage—Fits. Removal of clothing. Observations to be made while admitting a patient. Last offices.

Baths—on the bed—in the bath-room—preparations. Cases that should not be bathed without permission. Care and cleanliness of the hair.

Bath-medicated. Hot Air-vapour. Surgical bathspacks, hot and cold Sponging-hot, tepid, cold.

Administration of drugs and how to give simple medicines.

Observation of urine, stools, sputum, vomit, discharges. Specimens—saving of Excreta—disinfection and disposal.

Temperature—pulse—respiration. Clinical Thermometer.

Care of the mouth. Care of the back-bedsores.

Enemata—kinds—requisites—methods of administration.

Applications. Heat, moist and dry-cold iced. Icecaps fomentations—simple—medical surgical. Poultices—Linseed—mustard—charcoal—bread. Evaporating lotions—Counter irritants. Blisters, Leeches. Cupping—wet and dry.

Bandaging—12 demonstrations.

Sickroom Cookery—Theory & practical demonstrations. 15 hours.

Food—contamination—preservation. Milk—composition—dilution—care of—contamination—adulteration. Food values.

Preparing of trays—serving of meals—feeding of patients. Infants feeding.

Predigested food—making—value—uses of. Bengers food—Meat Extracts. Peptonised milk—whey—junket. Jelly—Albumin water.

Eggs—fish. Mehtods of preparing—cooking—serving. Vegetables—fruit—method of preparing—cooking—serving. Child—care of—diet for healthy and sick.

Special diets.

Hygiene Lectures & Demonstrations. 20 Hrs. to be given by a Doctor, preferably with Public Health experience.

Personal hygiene—aids to health—habits—fresh air. Cleanliness. Exercise—food—rest—clothing.

Atmosphere—Atmospheric-Pressure, composition of air, various impurities. Heat radiation—Conduction—convection—Body Heat, evaporation.

Ventilation in health and disease. Light—natural and artificial.

Water—sources of drinking water—rain—springs—rivers—wells.

Distribution of water—mains service pipes—head pipes—cisterns. Purification—pollution—storage—filtration—chemicals. Ozonisation ultra-violet rays.

Refuse—collection—removal—disposal.

House and Hospital—Water carriage system—Conservancy.

System—sewage system. Disposal—purification of sewage.

Drainage system—traps-soil pipe—water pipe.

Sanitary conveniences and appliances—water closets—sinks—baths—basins.

Infection—disinfection—methods.

The part played by the agency of water—food—air in the tropical diseases, such as cholera, dysentery, the enteric group of fever. Pneumonia—plague.

Personal and General prophylaxis.

The part played in tropical diseases by insects such as lice, bed bugs, fleas—sand flies—mosquitoes—worms and other intestine parasites.

Personal and General Prophylaxis.

Anatomy and Physiology. 30 lectures and demonstrations.

To be given by a Doctor. Revision lectures by Sister Tutor.

The bony skeleton—names of bones—types—position in the body.

Classification of bones—composition—structure—joints—varieties etc.

The muscular system—voluntary and involuntary. Difference in their mode of action. Position of the chief muscles in the body. Anatomy of the thorax and abdomen.

The lungs and their passages. The heart—the circulation of the blood.

Structure of the chief blood and lymphatic system.

The mouth—teeth—intestinal tract.

Classes of foodstuffs—fats—carbohydrates—proteins—absorption of food products.

The skin—sweet glands—hair—nails, the urinary system.

The nervous system.

Reproductive organs.

Special senses.

Ductless glands.

Lectures on Medical Diseases.—20 Lectures to be given by a Doctor in addition—20 lectures on nursing care in each disease to be given by the sister tutor, in co-ordination with the Doctor's lectures. Institutional & Domiciliary methods should be considered.

The cause of disease and human pathology.

Alimentary system ; the more important diseases and their chief symptoms.

Respiratory system ; cough, breathing in disease. The more important diseases and their symptoms.

Tuberculosis : symptoms, cause, disposal of sputum, sanatorium treatment, light, air, food prevention.

Circulatory diseases ; the more important diseases and their symptoms. Heart disease, Rheumatism, Cholera.

Excretory system : urine in disease. Chief diseases of the kidney and their symptoms. Diabetes.

Central nervous system. Chief diseases and symptoms. Convulsions, fits.

Natural and artificial protection against disease. Immunity, inoculation and vaccination. Bacteriology.

Infectious diseases ; smallpox, Enteric, Dysentery, Measles. Chickenpox, Whooping cough, Diptheria.

Isolation and disinfection of—

Introduction ; malaria, black water, relapsing fever.

Kala azar, plague, leprosy.

Beri beri, scurvy, pellagra.

Cholera, dysentery, hepatitis.

Sprue, ankylostomiassis, filariasis.

Snake bite, hydrophobia, heat stroke.

Diet in disease. Pre-digestion of foods, Special diets.

Nutrient enemata. Proprietary preparations, their uses and dangers. Deficiency diseases.

Medical emergencies, fainting, syncope, epileptic fits, convulsions, bleeding, colic, etc.

Drugs and Poisons.—Drugs and remedies. Their sources, nature, classes, method of use, common poisons, symptoms and treatment.

Lectures on Surgical Diseases.—20 lectures to be given by a Doctor in addition—20 Lectures on Nursing care by Sister Tutor in co-ordination with the Doctor's lectures.

Micro organism ; infection ; inflamation, suppuration, cellulitis. Tetanus, tuberculosis, etc.

Principles of asepsis ; antiseptics, sterilization, influence of atmospheric pressure, of boiling water and steam.

Haemorrhage, varieties of, first aid and surgical treatment.

Preparation of patients for operation. Duties of nurse in the operation theatre. Operations in private houses.

Injuries, shock, contusions, wounds varieties and processes of healing, Complications, treatment.

Burns and scalds. Ulceration ; gangrene, tumour, cancer of breast.

Fractures and dislocation, including first aid treatment, Orthopaedic Surgery, Causes of deformity.

Diseases of bones and joints. Use of splints. Head and spine injuries. Operations on the mouth. Empyema.

Abdominal surgery ; gastric and duodenal ulcer, gastric gall stones, appendicitis. Intestinal obstruction, etc.

Caecostomy and colostomy. Hernia, varieties, complications operations for.

Common diseases of rectum and anus. Istula, haemorrhoids carchinoma, Diseases of urinary system, Prostate, Care of patients after operation.

Anaesthetics :—Short account of action of general and local anaesthetics. Common anaesthetics. Preparations of anaestheticts table. Preparation of patients for general anaesthesia. Management while under general anaesthetic. Methods of artificial respiration. Care of patients during recovery. Treatment of the after effects of anaesthesia.

Gynaecology.—12 lectures to be given by a Doctor.

Structure and functions of the ovaries, fallopian tubes, uterus vagina. Disorders of menstruation and menopause. Vaginal discharges, New growths of voaries and uterus.

Preparation of patients for examination. Douche.

Thampoons, Plugs, Pessaries.

Nursing after major and minor operations.

Nursing of cases of Eye Diseases—6 lectures.

Anatomy and physiology briefly.

Instruments for examination. Foreign bodies, discharge from the ear. How to syringe ? Use of dry heat in acute inflammation of ear. Application of fomentations. Application of heat and cold. (Lieters coils). Application of leeches, blisters, etc., over the mastoid process, ear drops. Dressing after ear operations. Brief description of anatomy and physiology of the nose, Pharynx and laryns. Hygiene of the mouth with reference to the disease of the nose-pharynx and laryns ; spraying and couching. Haemorrhage from the nose and throat. Nasal discharges. Obstructions, to breathing and swallowing. Gargles mouth washes. Inhalations. How to paint the throat instruments for operations. Tonsies and adenoids. Abscess of throat. Tracheotomy. Administration of food in painful diseases of, and after operations on the throat.

Skin diseases—6 lectures.

Skin, anatomy and physiology. Application of remedies. Lotions, liniments, ointments, pastes, powders, Common diseases, boils, ring-worm, itch, eczema, psoriasis, secondary infections. Cleansing of skin, Removal of rusts.

Venereal Diseases—6 lectures.

Syphilis and Gonorrhoea.

A brief account of causes—mode of infection—signs & symptoms.

Prophylaxis—general rules regarding infectivity and modes of transmission of venereal diseases and their prevention.

Nursing Care of patients of venereal diseases.

Knowledge of sterilization ; of syringes.

Principles of dressing syphilitic wounds.

Care of eye and urethra in Gonorrhoea.

Urethral douches.

Prostatic massage. For male nurses.

Making of smears.

Nursing of children—20 hours.

(10 lectures by a doctor and 10 lectures by the Sister Tutor).

The development of a normal child-health requirements. General principles of infant feeding—the feeding of children up to 2 years.

The observation of children in health and sickness, cries, stools, attitude of the child, symptoms, etc.

The nursing of children including the giving of medicines—treatments—feeding and occupational therapy.

Special diseases of children.

APPENDIX 39.

SYLLABUS FOR THE SENIOR NURSING CERTIFICATE.

Length of course—3 years.

History of Nursing and Ethics.—20 Hours—In 1st Year, after the P.T.S. (Revision).

Unit I.—The pre-christian period—ideas of disease in the primitive world and resulting methods of treatment—medicine in ancient India, China, Egypt, Greece, Rome.

Unit II.—Nursing in the early Christian era—the deaconesses, the Roman matrons Monastricism, the development of hospitals.

Unit III.—Aristocratic and Military Influences—the influence of Feudalism—the knights and ladies of St. John of Jeruselum, of St. Lazarus, etc.

Unit IV.—Democratic and Secular Tendencies in Medical Nursing orders. Social and economic changes following the crusades ; St. Francis of Assisi and his Orders—St. Claire and the poor Claires, the Beguines.

Unit V.—Transition from Medieval to Modern era—Political, social and economic changes as a background of the period. The closing of monastries—the extension of the servant nurse system.

Unit VI.—Pre-Nightingale Reformers :—

St. Vincent do Paul and Milee. Le Gras John Howard, Elizabeth Fry, the work of the Fleidners at Kaisersworth.

Unit VII.—Florence Nightingale—Her life, her work in the Crimean War, the founding of the Nursing School at St. Thomas Hospital. Her interest in India and Reforms.

Unit VIII.—Contemporary developments—the discoveries of Pasteur, Lister Kock, etc. The relationship of Nursing to hospital reform.

Unit IX.—Nursing in India in the modern days—the introduction and growth of Nursing in India—development of schools—examination and registration—a brief review of nursing organisations in India today.

Unit X.—The Public Health Nurse—the story of her development in various countries and the need of such nurses in India.

Unit XI.—The contribution of the nurse of today to the History of Nursing—the responsibility of the nursing student to her profession—her heritage and opportunities.

First Year after the P.T.S.

Advanced Nursing Arts.—2 hours 3 times a week for 34 weeks, 102 hours.

Unit 1.—Collecting and sending specimens—Urine, stool, sputum, cerebro-spinal fluid (lumbar puncture, cesternal puncture) blood, kidney function tests—gastric analysis, abdominal paracentesis, etc.

Unit 2.—Providing the patients with a healthy environment both physical and mental, the patient's comfort and safety, supportive nursing measures. The uses of appliances, back rests, cradles, air rings, pillows, sand bags, knee pillows, fracture board, bradford frame, backing frame. Positions, lifting and turning the patient. Use of the wheel chair, heart table, etc.

Unit 3.—Pre-operative and post-operative nursing care.

Unit 4.—Giving of fluids and drugs by rectal drip-hypodermoclysis, and intravenous methods. Techniques used in the hospital and in the home.

Unit 5.—Planning the nursing care to provide for the patients' individual needs.

Unit 6.—Recognising and providing for the need of health teaching to patients and relatives ; answering patients' questions, giving explanations of hygiene and requirements of healthy living, demonstrating nursing care and medical treatment the patient will need after discharge. Teaching the adaptation of the principles of health to the patients way of living.

Unit 7.—Therapeutic treatments. In each case ways of winning the patients cooperation and methods used in the home should be included. Surgical dressing, care of plaster casts, counter irritants, hot and cold applications. Packs, sponges, inhalations. Hot air and steam tents irrigation and douches. The administration of oxygen, all important therapeutic techniques.

Unit 8.—Care of the dead.

Unit 9.—Nursing techniques used in diseases of the eye, ear, nose and throat.

Unit 10.—Nursing techniques adapted to the nursing of infants and children.

Combined course to run through the 2nd Year—190 *Hrs.*

This course should bring together into one course the pathology, medicine and medical nursing, surgery and surgical nursing, materia medica, diet and the public health knowledge each nurse needs as a foundation for her work in the hospital or in the home. An attempt is made to arrange the material in good psychological order and integrate it into a unit. The medical and surgical lectures should be given by doctors and followed by the Sisters Tutors' lecture giving the special nursing care in the conditions considered. The principles underlying good nursing care in each case should be applied to conditions in the hospital and in the homes. Stress should be placed on health teaching and prevention of disease throughout the course by the Sister Tutor and the doctors. The materia medica and diet therapy should be related to conditions studied.

Unit I.—Introduction to Medical and Surgical Nursing :—

The effect of disease on the body—tissue changes, inflammatory processes, infections—general and local—hemorrhage, embolism and shock.

Unit II.—Operative Aseptic Technique :—

Asepeis, general principles, surgical cleanliness, sterilization by Heat, by antiseptics.

Preparation of patient for operation. Post operative care. Operation Theatre—

Preparation of operating Theatre, lighting, heating, ventilation, equipment, instruments in common use. Operative procedures—nurses duties.

Preparation for operation in private house—Anaesthetics, general spinal rectal, local anaesthetics in common use, their general character.

Special Nursing care of cases given anaesthetics.

Unit III.—Nursing in diseases of the respiratory system :—

1. Medical aspects of diseases of the sinuses, tonsils, larynx, trachea and bronchi.

2. Surgery of the same including bronchoscopy.

3. Nursing care in those conditions.

4. Diseases of the lungs—Pneumonias, lung abscess, pulmonary emphysema, pulmonary tuberculosis.

5. Operation on the lungs and for conditions of the lung-lobectomy rib resections—drainage of lung abscess.

6. Nursing care in the above with special stress on health teaching position—use of special equipment—slings—sand bags—care of drainage suction, etc.

Unit IV.—Nursing in diseases of the circulatory system and :—

1. Heart diseases, myocarditis, endocarditis and valvular diseases pathology, symptoms, treatment.

2. Nursing care in heart disease.

3. Blood transfusion—indication, various types, use of plasma, dry blood, etc.

4. Diseases of the blood and lymphatics, anaemias, Raynauds, Buerger's and Hodgkin's disease.

Unit V.—Disease of the Gastro intestinal system :—

1. Diseases of the mouth, throat and stomach.

2. Surgery in structure of the esophagus, gastric ulcer, malignant tumours of the stomach.

3. Special nursing care in such cases—Health teaching necessary for such cases.

4. Diseases of the intestinal tract, typhoid, dysenterys.

5. Surgery of the intestinal tract—intestinal obstructions, appendicitis, hernia, resection, etc.

6. Nursing care in diseases and operations on the intestinal tract.

7. Operations on the colon, rectum and anus.

8. Nursing care in the same.

Unit VI.—Conditions of the urinary tract :—

1. Diseases of the kidney, urethra, bladder.

2. Operations on the urinary tract.

3. Nursing care in the above—including an understanding of kidney function tests, special treatments, etc.

Unit VII.—Conditions of the musculo skeletal system :—

1. Fractures, dislocations, sprains and their treatment.

2. Diseases of the bones and joints, acute and chronic arthritis, rheumatic fever.

3. Tuberculosis of the bone and joints—deformaties, and operations done.

4. Nursing care in orthopaedic Diseases—including special points regarding traction, frames, splints and plaster—helping the patient with his problems of rehabilitation and the care of orthopaedic cases in the home.

Unit VIII.—Diseases of the skin :—

1. Diseases of the skin and their medical treatment.

2. Burns, scalds, skin grafting, Plastic operations.

3. Nursing care in skin conditions.

Unit IX.—Conditions affecting the muscular system :—

1. Tumours benign and malignant with stress on early attention.
2. Nursing care—health teaching every nurse should do.

Unit X.—Conditions of the endocrine glands and metabolism :—

1. Thyroid conditions, diabetes.
2. Surgery in Thyroid conditions.
3. Nursing care in such cases with special reference to teaching the patient and his relatives.

Unit XI.—Conditions of the nervous system :—

1. Chorea, epilepsy, general parcsis, tabes dorsalis, neurities, sciatica, etc.
2. Operations on the brain and spinal cord.
3. Nursing in the above.

Unit XII.—Gynaecological and Geneto-urinary conditions :—

1. Hygiene and health of sex-life with special reference to the psychological aspects.
2. Gynaecological conditions and medical treatment.
3. Surgical treatment of gynaecological conditions.
4. Nursing care in the above.
5. Medical aspects of genito-urinary disease.
6. Surgery of the genito-urinary tract.
7. Nursing care in conditions of the genito-urinary tract.

Unit XIII.—Conditions of the eye, ear and nose :—

1. Eye health.
2. Diseases of the eye—medical and surgical treatment.
3. Nursing care in eye conditions.
4. Disease of the nose and ear including the prevention of deafness.
5. Nursing care in the above.

Unit XIV.—Deficiency diseases :—

1. Deficiency diseases—their prevalence in India, early symptoms and prevention.
2. The Nurses responsibility in health instruction & nursing care.

Unit XV.—Tropical diseases :—

Malaria, black water, relapsing and yellow fever.

Kala azar, plague, leprosy.

Cholera, dysentery, hepatitis.

Sprue, ankylostomiasis, filariasis.

Snake bite, hydrophobia, heat stroke.

2. Nursing care in the hospital and in the home with special stress on health teaching and prevention.

Unit XV.—Communicable diseases :—

1. Measles, chickenpox, small-pox, diphtheria, etc.
2. Nursing care in the hospital and in the home with special stress on prevention of spread of the disease and health teaching.
3. Gonorrhoea and syphilis with stress on prevention and control.
4. Nursing care in the above and the nurses responsibility for health teaching.

THIRD YEAR COURSE.

Nursing of children—20 hours.

(10 lectures by a doctor and 10 lectures by the Sister Tutor.)

The development of a normal child-health requirements. General principles of infant feeding—the feeding of children up to 2 years.

The observation of children in health and sickness, cries, stools, attitude of the child-symptoms, etc.

The nursing of children including the giving of medicines—treatments—feeding and occupational therapy.

Special diseases of children.

Mental hygiene—15 hours.

Mental health and requirements for a well balanced personality. The needs of the individual—types of personality—mental and emotional development—instincts, the subconscious mind—common neurological conditions, causes, preventive measures, sublimation. The problem of mental diseases in the community—practical psychology.

The principles and pratice of war and hospital management.—30 hours.

Ward administration, the principles of supervision, assigning of duties, hospital housekeeping, inventories and ordering equipment and supplies.

The selection of staff—staff education, budgets, records, housing and health of the staff, medical examinations and supervision of the health of the staff; the prevention of diseases, care of sick nurses. Making the best use of resources at hand—a planned programme for improvement. Opportunities for observation and practice of principles taught should be given.

Professional Problems—15 hours.

The problems and responsibilities of the young graduate—how to apply for a post—contracts—ethical responsibilities—professional opportunities.

Nursing organisations in India—their organisation, aims and work—professional journals—the International Council of Nurses, the Red Cross.

Nursing legislation, registration, what are desirable laws—their purposes, the nurses responsibility for nursing and health legislation. Legal matters.

India's needs in the nursing field—trends and developments in India and other countries.

Health Problems in India to-day—20 hours.

A consideration of the health problems of the country and attempts that are being made to meet them. Malaria, leprosy, tuberculosis, venereal diseases, maternity and child welfare, school health, industrial health problems. Rural health—economic factors in national health—health education, the need and method—preventive medicine, the responsibility of the nurse Preblems in he local community.

APPENDIX 40.

CURRICULUM FOR PRE-NURSING GROUP OF 1 YEAR IN HIGH SCHOOLS IN INDIA.

Subjects.	Taught by.
Anatomy and Physiology	Doctor.
Hygiene	Doctor.
First Aid	Doctor.
Physics & Chemistry & Practical Physiology ..	University Graduate.
Biology	Do.
Psychology	Do.
Dietetics and practical cookery	Do.
English Language & Essay writing	Do.
Home Nursing St. John & Red Cross Standard ..	Registered Nurse Instructor.
Mother Craft	Do.
History of Nursing	Do.

Visits to Institutions, Games and Physical Training.

Examination at the end of course.

APPENDIX 41.

Syllabus for Midwives Training Courses.

Syllabus for Midwives Diploma or Certificate.

1. The period of professional study between the date of admission as midwife pupil and the date of examination for any diploma or certificate which entitles the holder thereof to be registered in Part I of the register of midwives shall be a period of certified study of not less than 18 months:

Provided that a fully trained nurse shall be admitted to the examination in midwifery after not less than six months training on obstetrics if she can satisfy the requirements of rules 1 and 2 of Part I of this Appendix in all respects other than that of the period spent under training as a midwifery student:

Provided further that for a period of twenty four months from the 24th December, 1935 midwives with twelve months training shall be eligible for registration.

2. In every course of professional study and examination, the following subjects shall be included:—

(*i*) Gyanacology.—An elementary knowledge of menstruation, abnormalities in menstruation, displacements of the uterus, growths and tumours (cancer) in the pelvis (uterus and adnexa) and inflammatory conditions of the vagina.

(*ii*) Antenatal care.—The training should include attendance at an antenatal clinic, if possible, or study of antenatal cases. Notes of at least ten of such cases should be written in the case book.

(*iii*) Midwifery.—(In any scheme of examination for midwives, emphasis should be laid upon the practical aspects of midwifery and the actual conduct of normal and abnormal labours, while the training is given both in theory and the practice of the subject.)

Asepsis and antisepsis in midwifery. Some of the common antiseptics used in midwifery and the way to prepare them. The disinfection of the person's clothing and appliances.

Elementary general physiology and anatomy of the female pelvis and the organs of generation, both external and internal.

Obstetrical diagnosis.
Management of normal pregnancy.
Hygiene of normal pregnancy.
Hygiene and care of the pregnant woman and the unborn child.
Labour and its phenomenon.
Signs and symptoms of abnormal pregnancy.
Management of normal labour.

Diagnosis and management of abnormal presentations face, brow pelvis presentations, transverse presentations, multiple pregnancy.

Care of the puerperium and its management.

Complications of the puerperium including puerperal sepsis and septic infections. Causes, symptoms, diagnosis and methods of treatment.

Haemorrhages of pregnancy antepartum and postpartum.
Toxemias of pregnancy albuminuria, eclampsia hyperemesis.
Abortion, miscarriage and premature labour.
Extrauterine pregnancy.

Precipitate labour, uterine, inertia, rupture of the uterus, causes, symptoms, diagnosis and treatment.

Prolonged labour.

Disease of the decidua and ovum ; hydramnias and vesicular mole.

Contracted pelvis—diagnosis—common varieties—symptoms—treatment.

Diseases associated with puerperium—cystitis—mastitis—phlegmasia—puerperal insanity.

Some common obstetrical operations and the duties of the midwife therein.

Vaginal examination during normal labour under supervision.

(*iv*) Care of the infant with particular reference to—

Asphyxia neonatorum.
Ophthalamia neonatorum.
Infantile diarrhoea.
Convulsions.
Care of the premature infant.
Management of the new born, both mature and premature.
Breast feeding and artificial feeding.

(*v*) Venereal diseases :—Syphilis and gonorrhoea with special reference to their effects on the pregnant and parturient woman.

(*vi*) An elementary knowledge of the following diseases common in the tropics with special reference to their effect on pregnancy labour, and puerperium :—

(1) Malaria.
(2) Kala-Azar.
(3) Smallpox and eruptive fevers.
(4) Typhoids.
(5) Influenza pneumonia, tuberculosis.
(6) Anaemia.
(7) Hook-worm.
(8) Leprosy.

(*vii*) General principles of sick nursing:—

Nursing as a profession and hospital etiquette.
Work in the ward.
Observation and care of the patient.
Temperature, pulse, respiration, clinical chart and bedside report.
Bed-making and sponging.
Contagion and disinfection.
Catheterisation : bladder and bowel wash.
Enema and douches.
Hot and cold application.
Administration of food and medicine.
Invalid cooking.
Some emergencies.
Care of the dead.
Cold sponging.
Prevention and care of bed-sores.
Different kinds of haemorrhage.
Arrest and treatment of the same.
Personal and surgical hygiene.

No candidate shall be permitted to appear for the examination, unless she produces a certificate to the effect that she has—

(*a*) personally attended 20 labour cases,

(*b*) nursed twenty lying-in women and their infants during the ten days following labour,

(*c*) attended not less than 10 antenatal cases, and

(*d*) attended not less than two-thirds of the lectures and demonstrations given in connection with the curriculum laid down.

APPENDIX 42

Syllabus for Technicians' Course.

Group I (i.e., Anatomy and Physiology).

Part I.

A.—Anatomy—*Period 6 months.*

1. Elements of Anatomy of the human body with special reference to Osteology.
2. Cleaning and care of bones—preparation of skeletons.
3. Training in the care and uses of different instruments used in the dissection of the human body.
4. Instruments in the preparation of different fluids used as a fixative for the dead body.
5. Record keeping of the stock of the department.
6. Training in making arrangement for a lecture-demonstration.
7. Use of a rough balance.

B.—Physiology—*Period 6 months.*

1. Cleaning of glassware and other pieces of apparatus used.
2. Trained in the operation and care of routine laboratory equipment such as miscroscopes, water bath, etc.
3. Staining method, including preparation of simple stains.
4. Handling of Laboratory animals.
5. Preparation of simple reagents.
6. Technique of examination of urine and blood.
7. Use of a rough balance.
8. Preparation of solutions used for qualitative test.
9. Muscle and nerve preparation of frog.
10. Induction coil and their uses.
11. Setting up of B. M. R. and other apparatuses.
12. Maintaining of records, if any.
13. Care and management of experimental animals.
14. Glass blowing.

Examination at the end of one year's course.

Candidates will be given lecture-demonstration by the staff of the department.

Part II.

A.—Anatomy—*Period 4 months.*

1. Injections—preservation of dead body.
2. Methods in embalming of the human dead body.
3. Arrangement for the dissection of human body.
4. Care and mounting of specimens for museum.
5. Training in the preparation of part for dissection and the methods used for a nice display of the part.
6. Histological technique—training the Department of Pathology and Physiology if required.

B.—PHYSIOLOGY—*Period 8 months.*

1. Preparations of reagents for volumetric and gravimetric analysis.
2. Preparation of various fixatives and staining reagents required, in histopathological work.
3. Use of the microtome.
4. Embedding tissue, and cutting of section.
5. Different methods of staining tissue.
6. Methods employed for killing experimental and other laboratory animals.
7. Training in setting up of drums and kynograph.
8. Methods used for microphotograph and the use of Epidiascope, etc.

Final examination at the end of 2 years.

COURSE FOR LABORATORY TECHNICIANS.

For Group II (i.e., Pathology, Bacteriology and Biochemistry).

PART I.

ONE YEAR'S COURSE.

I.—*Preparation and Sterilization of glassware and media.*

(*i*) Glassware—Preparation, cleaning and sterilization.

(*ii*) Preparation of simple media and combined media, including methods of their sterilization. Care and operation of different types of sterilisers and hot-air ovens.

II.—*General Bacteriological and Parasitological Technique.*

(*i*) Training in the operation and care of routine laboratory equipment such as miscroscope, incubators, water baths and centrifuges, etc.
(*ii*) Staining methods including preparation of simple stains.
(*iii*) Cultural methods and use of media.
(*iv*) Technique of Agglutination tests.
(*v*) Disinfection and sterilisation of contaminated material.
(*vi*) Handling of laboratory animals.

III.—*Serological Technique.*

(*i*) Care of apparatus used in the tests.
(*ii*) Preparation of material for examination.

IV—*Care and Management of Experimental animals.*

V—*Maintenance of records.*

VI—*Clinical Laboratory Methods.*

(*i*) Preparation of simple reagents, *e.g.*, Fehling's and Leishman, etc.
(*ii*) Staining of smears by routine methods, *e.g.*, Grams, Ziehl-Neilson.
(*iii*) Technique of examination of Urine, Faeces, Sputum, Blood, etc. (Qualitative).

VII.—*Attendance in the Post-Mortem Room.*

(*i*) To get acquainted with the use of instruments and render intelligent assistance to the Pathologist.

(*ii*) Collection and handling of pathological material received from the hospital and post-mortem room.

(*iii*) The candidates will have lecture-demonstrations once a week by one of the medical officers of the department.

VIII.—*Biochemistry.*

(*i*) Cleaning the glassware, calorimeter and other pieces of apparatus used.

(*ii*) Preparation for Fractional Test Meal, and for other tests like Kidney Function, Liver Function Tests, etc.

(*iii*) Use of a rough balance.

(*iv*) Preparation of solutions used for qualitative tests.

(*v*) Technique for simple qualitative tests used in routine Biochemical analysis.

(*vi*) Setting of apparatus for routine quantitative Biochemical analysis.

(*vii*) Setting up of B. M. R. apparatus.

The candidates will have lecture-demonstrations once a week on fundamental principles.

An examination will be held at the end of the whole course.

PART II.

ONE YEAR'S COURSE.

I.—*Clinical Laboratory Methods.*

(*a*) Instructions in the preparation of different reagents required in Clinical Laboratory for examination of Urine, Blood, Faeces, Sputum, C.S.F., etc.

(*b*) Setting up of apparatus for the various tests.

(*c*) Use of microscope.

II.—*Histo-Pathology.*

(*a*) Preparation of various fixatives and staining reagents used in Histo-Pathological work.

(*b*) Use of the microtome.

(*c*) Embedding and section-cutting.

(*d*) Different methods of staining.

III.—*Biochemistry.*

(*a*) Use of a Sensative Balance.

(*b*) Use and calibration of Volumetric measuring apparatus.

(*c*) Preparation of standard Volumetric Solutions and accuracy in Volumetric analysis.

(*d*) Principles of Colorimetry and Nephelometry.

(*e*) Care and use of micro analytical apparatus.

(*f*) Preparation of reagents for routine biochemical analysis.

(*g*) Technique of routine quantitative Biochemical analysis of blood, Pathological fluids and concretions.

IV.—*Advance Techniques.*

(*a*) Preparation of special media.

(*b*) Advanced bacteriological and serological technique with specia reference to identification of organisms and vaccine manufacture.

(*c*) Preparation of reagents and stains.

(*d*) Advanced parasitological technique.

(*e*) Management, care and handling of experimental animals and technique associated with their use in research.

(*f*) Maintenance of records.

Candidates will have lecture demonstration in such subjects as general Bacteriology, Immunity and Elementary Physiology.

Examination will be held at the end of the whole course.

APPENDIX 43.

Course for Radiographers.

Part I.

Six months' tuition followed by examination.

Elementary Anatomy.—Skeletal bones—epiphysis in Embryo, in infancy and in adults. Skull with reference to military Fossa, Cranial Fossa, blood vessel grooves fractures; the diploe and Lumbar vertebrae—long and short bones of the extremity.

Physiology.—Elementary knowledge of the special organs of the body—Other Brain, spinal cord, lungs and heart, oesophagus, stomach, intestines (large and small), appendix, liver, spleen, pancreas and ductless glands.

Pathology.—Lesions of the skull—Diseases of the heart and lungs—Viscerae of abdomen, bony tumours, etc.

Part II.

Twelve months' tuition followed by examination.

Radiography; Radiotherapy and Electrology suitable for Certified Radiological Assistants.

History, Lectures.

Apparatus.—Construction, wiring and assembling Valve and X-Ray tubes, types, construction and properties. Care and control of apparatus.

Radiography.—Radiographic technique—Care of patients while in the Radiographic Department.

Dark Room.—Photography and Dark Room Technique.

Radium & X-Ray Treatment.—Superficial and Deep exposures—filters—Radiation Dangers—Care of patients while in the Department.

Electrology.—Principles of Electrical, Light and Heat Treatment. Methods of application—Care of patients during treatment.

Electrocardiography.—Principle and application of the instrument.

Part III.

6 months' Practical work in the different sections of an Institute of Department of Radiology.

APPENDIX 44.

Extract from a booklet describing the functions of the Registry of Medical Technologists of the American Society of Clinical Pathologists.

The Registry of Medical Technologists has established certain standards for workers who desire to follow this vocation, and it conducts examinations for those who meet the qualifications. The Technologist who is certified by the Registry of Medical Technologists is recognized by leading clinical pathologists and well-informed physicians as having adequate qualifications and enjoys a definite professional standing as a result of the Registry's recognition.

The Registry has been so successful in its work that it has become the quasi-official body in this country for certifying the qualifications of laboratory workers. Its work is heartily endorsed by the leading medical and hospital organizations, notably the American Medical Association, the American College of Surgeons, the American Hospital Association, the Catholic Hospital Association, and many others, all of which commend its aims and objectives and recommend to their respective members the acceptance of the Registry certificate as proof of the competence of a Medical Technologist. Staff inspectors of the American Medical Association and American College of Surgeons, in their periodic visits to hospitals, carefully observe whether or not the workers in the clinical laboratories have Registry certificates. The Registry, in brief, while purely voluntary and non-coercive, is universally accepted as the authoritative organ for qualifying the laboratory technicians of the United States and Canada.

The conduct of the Registry is vested in a board of six members, who are elected by the American Society of Clinical Pathologists.

The office of the Registry is conducted by a registrar approved by the Board, who, under the direction of the Chairman and with the aid of clerks, attends to the necessarily voluminous correspondence, routine business, book-keeping, and elaborate filing system required in the management of what has become a truly useful and important institution.

An Advisory Committee of five Medical Technologists aids the Board of Registry in the conduct of its work. Two members of this committee are members of the American Society of Medical Technologists and three are chosen from the registrants who are not members of the American Society of Medical Technologists.

Eligibility.

Applicants for the Registry examination must have graduated from an accredited high school or have received an equivalent education. In addition, they must have attended a course of at least two years at a college or university accredited by the regional professional college association. In these two years emphasis must have been placed on chemistry and biology.

After the necessary college credits have been acquired, the applicant must have instruction for at least twelve consecutive months in an approved training school for Medical Technologists, or an apprenticeship instruction of at least twelve consecutive months under a qualified clinical pathologist.

Examination of Applicants.

Applicants who have met the above requirements will be permitted to take the Registry examination. Twice a year, usually in April and October, examinations are conducted in over 100 localities in the United States and Canada. The examinations are in charge of clinical pathologists, usually

members of the American Society of Clinical Pathologists. An effort is made to send applicants to the nearest examiners. Applicants are never assigned to examiners under whom they have been trained, or in whose laboratory they are employed. Under no circumstances are exemptions from the examination allowed.

The examination is divided into two parts :

1. A written examination usually consisting of ten questions.

2. An oral and practical examination during which the applicants are asked to carry out under the eye of the examiner or his assistant certain standard laboratory procedures, besides answering questions demonstrating their knowledge in Medical Technology.

The questions for both the oral and written tests are formulated by members of the Board of Registry and sent under seal to each local examiner. The latter then marks the results of the practical test and sends these and the answers to the written test to the registrar, who in turn transmits them to the official examiner. By this method a fair and impartial judgment is reached.

The practical examination and the written examination have equal value, and a passing grade of 70 per cent. must be received in each.

Title of Registrant.

The certificate issued by the Board designates the holder as a Medical Technologist who is competent to render general technical service in a clinical laboratory under the supervision of a qualified clinical pathologist, or if working in a physician's office to perform routine laboratory tests for his patients."

APPENDIX 45.

Schools for Occupational Therapists, Physical Therapists and Clinical Laboratory Technicians.

Council on Medical Education and Hospitals.

AMERICAN MEDICAL ASSOCIATION.

Essentials of an Acceptable School for Clinical Laboratory Technicians.

I.—*Organization.*

1. Acceptable schools for training laboratory technicians may be conducted by universities, colleges, hospitals or public health laboratories.

2. The Council has promulgated standards for this type of training to supply physicians, hospitals and prospective students with reliable information and for the protection of the public.

3. Responsibility for courses in hospitals should be placed on the hospital administration rather than the laboratory director. In colleges and universities this responsibility is on the controlling board, as for other courses.

4. Resources for continued operation of the school should be insured through regular budgets, gifts or endowments but not entirely through students' tuition fees. Experience has shown that commercial schools operated for profit frequently do not adhere to proper ethical and education standards and are, therefore, not acceptable.

5. There must be available transcripts of high school, college work and other credentials. Attendance and grades of students shall be carefully recorded, by means of which an exact knowledge may be obtained regarding each student's work.

6. At least two or more students should be enrolled in each class.

II.—*Faculty.*

7. The School should have a competent teaching staff. The Director must be a graduate in medicine and a pathologist of recognized ability. He shall take part in and be responsible for the actual conduct of the training course. He shall be in daily attendance for sufficient time to supervise properly the laboratory work and teaching.

8. In laboratory practice the enrolment shall not exceed one student to each member of the teaching staff. The staff should include not less than one salaried instructor who is a registered technician or eligible for registration in addition to the laboratory director.

III.—*Clinical Facilities.*

9. Each student should receive practice training, adequate in kind and amount under competent supervision, in a hospital laboratory. The hospital should be registered by and be otherwise acceptable to the Council on Medical Education and Hospitals of the American Medical Association and have a minimum of 2,000 yearly admissions. There should be a minimum of 15,000 tests and examinations carried out in the laboratory department annually.

10. Adequate space, light and modern equipment shall be provided in the laboratory department. A library containing up-to-date references, texts and scientific periodicals pertaining to clinical laboratory work and pathology should be maintained.

11. Satisfactory record systems shall be provided for all work carried on in the department. Monthly and annual classification of the work of the department should be prepared.

IV.—*Curriculum.*

12. A. Candidates for admission should be able to satisfy one of the following requirements:

1. Two years of college work, including chemistry, biology and physics from an accredited college or university.

2. Graduation from a school of nursing recognized by the state board of nurse examiners, and in addition college chemistry.

B. The course of training shall be not less than twelve months in duration and shall include the following divisions:

1. Biochemistry.
2. Hematology.
3. Bacteriology.
4. Parasitology.
5. Histologic technic.
6. Serology.

The instruction shall include:

1. Text assignments.
2. Lectures.
3. Demonstrations.
4. Quizzes.
5. Examinations—written, oral and practical.

V.—*Ethics.*

13. Exhorbitant fees and commercial advertising shall be considered unethical.

14. Schools conducted primarily for the purpose of substituting students for paid technicians will not be considered for approval.

ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR PHYSICAL THERAPY TECHNICIANS.

I.—*Organization.*

1. A school for physical therapy technicians should be incorporated as or under a non-profit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2. Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

II.—*Faculty.*

3. The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. Nominations for faculty positions should be made in accordance with academic custom. The staff should include not less than one qualified salaried instructor and in each institution where practical training is carried on not less than one qualified physical therapist. The question of full-time and part-time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III.—*Plant.*

4. The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Adequate equipment should include anatomic charts, manikins, models, streopticons and other aids to effective teaching. It is suggested that dissecting materials should be provided to enable each student to dissect or have the benefit of demonstration of dissection of at least the lateral half of the human cadaver. Skeletons and disarticulated bones should be supplied. There should be a library receiving regularly all the scientific periodicals pertaining to physical therapy, current numbers of which should be easily accessible to the students.

IV.—*Clinical Facilities.*

5. Provision should be made for each student to receive practice training adequate in kind and amount under competent supervision in physical therapy in a hospital or other institution acceptable to the Council on Medical Education and Hospitals of the American Medical Association.

V.—*Resources.*

6. Experience has shown that a modern school of physical therapy cannot as a rule be maintained by the income from students' fees. No physical therapy school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees.

VI.—*Administration.*

7. There should be careful and intelligent supervision of the entire school by an executive officer who, by training and experience, is fitted to interpret the prevailing standards in physical therapy education, and who is clothed with sufficient authority to carry them into effect.

8. There should be satisfactory records, showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Except for good cause, such as for illness, no credit should be given for any course when the attendance has been less than 90 per cent. of the full time.

VII.—*Requirements for Admission.*

9. Candidates for admission should be able to satisfy one of the following requirements:

(*a*) Two years or sixty semester hours of college, including courses in physics and biology.

(*b*) Graduation from an accredited school of nursing.

(*c*) Graduation from an accredited school of physical education.

Courses in general physics, chemistry and biology are highly recommended for all who seek to enter training in physical therapy.

10. The admission of students to the physical therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the physical therapy school is an integral part of the university, this work usually devolves on the university examiner.

11. Advanced standing may be granted to students for work done in other acceptable physical therapy schools or hospital departments, provided the entrance requirements and other essentials herein set forth have been complied with. Official verification of the student's previous physical therapy work should be obtained by direct correspondence with the schools previously attended, and his preliminary qualifications should also be verified and recorded the same as for first-year students.

12. Complete physical examination of each student admitted should be conducted under the auspices of the school.

VIII.—*Publications.*

13. The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications.

IX.—*Minimum Curriculum.*

Subjects.	Hours	
	Theory	Lab. & Practice training.
Anatomy (including applied anatomy, demonstration on cadaver and lecture)	210	
Clinical practice	..	400
Electrotherapy	30	45
Ethics and administration	5	..
Hydrotherapy	5	15
Massage	15	45
Pathology	30	..
Physiology	30	45
Principles of physical therapy as applied to :—		
Medicine	15	30
Neurology	10	15
Orthopedics	15	30
Surgery (including surgical observation)	15	30
Psychology	15	..
Therapeutic exercise	30	75
Electives	45	..
Total 1,200 hours ..	470	730

Suggested electives : asepsis, bandaging, first aid, history of physical therapy, hygiene, joint measurements, office routine, occupational therapy, records, social service.

All subjects should be taught by qualified teachers.

Length of course : Not less than nine months.

ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY.

I.—*Organization.*

1. A school of occupational therapy should be incorporated under the laws regulating associations operated not for profit. The control should be vested in a board of trustees composed of public spirited men or women having no financial interest in the operation of the school. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2. Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

3. Schools of occupational therapy should not be operated by hospitals independently. It is understood, however, that hospitals are needed for practice training in the several branches of occupational therapy as required under clinical affiliations.

II.—*Resources.*

Experience has shown that an adequate school of occupational therapy cannot be maintained solely by the income from students' fees. No occupational therapy school, therefore, should expect to secure approval which does not have a substantial additional income.

III.—*Faculty.*

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. The staff should include no less than one regular salaried instructor and one registered occupational therapist. The question of full-time and part-time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained in the lines they are teaching.

IV.—*Plant.*

1. The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Equipment should be adequate for efficient teaching in the various departments.

2. A library containing standard texts and leading periodicals in occupational therapy should be provided.

V.—*Administration.*

1. *Supervision.*—There should be careful and intelligent supervision of the entire school by the dean, director or other executive officer who, by training and experience, is fitted to interpret the prevailing standards and who is clothed with sufficient authority to carry them into effect.

2. *Records.*—There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Schools should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, no credit should be given for any course when attendance has been less than 80 per cent.

3. *Credentials.*—The admission of students to the occupational therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the occupational therapy school is an integral part of the university, this work usually devolves on the examiner or registrar.

4. *Advanced Standing.*—At the discretion of the administration, advanced standing may be granted for work (or experience) require in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of previous work (or experience) should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5. *Number of students.*—The number of students admitted to the training course should not be excessive. In practical work of a laboratory nature the number of students that can be adequately supervised by a single instructor is, in general experience, about fifteen : in lectures the number may be much larger. A close personal contact between students and members of the teaching staff is essential.

6. *Discipline.*—All training schools reserve the right to drop a student at any time for any cause which the school authorities deem sufficient.

7. *Publications.*—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications.

VI.—*Clinical Affiliations.*

1. No student should be eligible for entrance into clinical training until she has satisfactorily completed at least one academic year, equal to thirty semester credits, fifteen of which should be in biological science, social science, theory of occupational therapy and clinical subjects and fifteen in therapeutic occupations.

2. Hospitals or institutions affiliating for clinical training should be carefully judged by the board of directors of the school concerned and be acceptable to the Council on Medical Education and Hospitals and should not be considered eligible for training of students unless the director of the occupational therapy department is a competent occupational therapist qualified to handle students.

3. The occupational therapy director of each training department should be considered a member of a special committee on the training school staff and at all times be in close contact with the director of the school.

4. A well defined programme of lectures, clinics and staff meetings should be offered by the hospital to each group of students.

5. Written records, case studies and examinations should be required of each student. Students should obtain satisfactory rating in clinical training before a diploma is granted.

6. Uniform written records specially covering the student's personal adjustment as well as general ability should be kept by the occupational therapy director of each department, regular copy of which should be sent to the school at frequent intervals and all reports filed in the individual student's record at the school.

VII.—*Pre-requisites for Admission.*

1. *Age.*—The admission of candidates should be governed by the fact that it is required that each student be not less than 21 years of age at graduation.

2. *Education.*—All candidates must furnish proof of having completed a high school education or its equivalent. Equivalent of high school should be adjudged and recorded by the admissions committee of the school. In addition, all candidates except those for the degree course, must have had at least one year and preferably two years of further accredited education or successful professional training or experience.

Candidates for admission to training course in a college or university which is combined with work leading to a bachelor's degree should be required to comply with the regular entrance requirements of the institution concerned.

3. *Character.*—All candidates should be required to present evidence of good character and general fitness, the evidence of which should be investigated and duly weighed by the school concerned.

4. *Health.*—All students should be given a medical examination under the supervision of the school as soon as practicable after admission, and this examination should be repeated annually. The first examination, at least, should include a truberculin test followed by a roentgen examination of the chest when indicated.

VIII.—*Curriculum.*

1. *Length of course.*—The minimum length of the course should be twenty-five calendar months (100 weeks) of full-time training. The course should include not less than sixteen months (sixty-four weeks) of theoretical and technical instruction and not less than nine months (thirty-six weeks) of hospital practice-training under competent supervision : all as set forth in detail in succeeding sections.

2. *Distribution of Time.*—The two years devoted to theoretical and technical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of didactic instruction and not less than twenty-five hours of technical instruction in therapeutic occupations.

(*a*) *Theoretical.*—The hours devoted to theoretical training should be still further subdivided as follows :—

	Semester hours.
(1) Biologic Sciences to include : Anatomy, Kinesiology, Neurology, Physiology, Psychiatry, Psychology	15
(2) Social Sciences to include : Sociology, Delinquency and Crime, Social and Educational Agencies	4
(3) Theory of Occupational Therapy to include : Interpretative courses covering the principles and practice of occupational therapy in relation to orthopaedics, pediatrics, tuberculosis, psychiatry, general medicine, surgery and other special fields	4
(4) Clinical Subjects to include : Blindness and Deafness ; Cardiac Diseases ; Communicable Diseases (including bacteriology if this subject is not given elsewhere). ; General Medical and Surgical Conditions ; Orthopaedics ; Tuberculosis	
(5) Electives	3
Total	30

(*b*) *Technical.*—Because of the increasing demands of the medical professions for qualified therapists trained in special fields applicable to the education and training of disabled persons as well as to the treatment of the sick, there must be a certain amount of flexibility in technical requirements.

Concentration may be in the field of *Therapeutic Arts and Crafts*, in some branch of *Educational Therapy*, or in *Recreational Therapy*.

A minimum of thirty semetser hours should be devoted to technical training. The major portion may be allotted to concentration in one field and, in this case, survey courses should be given in the other fields.

(1) The Field of Therapeutic Arts and Crafts to include:
Design.
Leather.
Metal.
Plastic Arts.
Textiles.
Wood.

(2) The Field of Educational Therapy to include :
Adult Education.
Fine and Applied Arts.
Home Economics.
Hospital Library Management.
Primary and Secondary Education.

(3) The Field of Recreational Therapy to include :
Dramatics.
Gardening.
Music.
Physical Education.
Social Recreation.

Advanced standing may be given to students already qualified in one or more branches of the three fields. Such persons may then be given survey courses in the other fields of concentration, and practice in the application of their speciality to the treatment of disabled persons.

(c) *Clinical Affiliations.*—The time devoted to hospital practice-training shall be not less than nine months spent in the following types of hospitals:—

Mental hospital	.. Not less than two months.
Tuberculosis sanatoriums or services ..	.. Not less than one month.
General hospitals	.. Not less than one month.
Children's hospitals or services	.. Not less than one month.
Orthopaedic hospitals or services	.. Not less than one month.

The remaining three months optional.

The Council acknowledges the splendid cooperation extended by the various schools included in the study and also the help of the officers and Educational Committee of the American Occupational Therapy Association. The Council will continue actively in the promulgation of high standards for schools of occupational therapy. Periodic re-examination of the approved schools will be made and revisions of the list will be published as indicated.

APPENDIX 46.

COURSE OF TRAINING RECOMMENDED FOR RESEARCH WORKERS.

1st year (intern year).—Act as demonstrator and assist in class laboratory preparations ; take such supplementary courses in pure or applied science as individuals may require.

2nd year. Junior assistant.—Assist in preparing class demonstrations ; assist in research ; participate, in rotation, in departmental routine ; build up personal reference files and notes for teaching, through historical reading ; prepare reviews for seminars.

3rd year. Assistant.—Supervise demonstrators ; assist in demonstrations ; give stated lectures ; assist in class examinations ; participate, in rotation, in departmental routines ; assist in research in association with others ; undertake independent research ; continue historical reading and the building up of reference files and notes ; assume responsibility for routine reporting on current literature in one field.

4th year. Senior Assistant.—Supervise junior assistants ; give stated demonstrations and lectures ; assist in professional or final examinations ; complete rotation in departmental routines and in taking charge of seminar programmes ; carry out independent research ; complete preparations of personal reference files and notes for teaching ; prepare lists of equipment, apparatus, etc., with addresses of suppliers, prices, etc. ; prepare a budget.

During the period of training, provision should be made for trainees to acquire a working knowledge of biomathematics, languages (*e.g.*, French, German and basic Latin) and library methods. Opportunities should be developed to ensure contacts with workers in other fields of medicine and other faculties ; to promote reading of current events and non-medical literature ; to ensure acquaintance with industrial, agricultural and Government processes and organization so as to develop a general understanding of contemporary life and of the place and potentialities of medicine ; to develop team work, discipline and leadership ; service in a medical O. T. C., participation in athletics and in various societies should be required or encouraged. In practice, it may be found expedient and economical to arrange for instruction in subjects of more or less common interest for groups of trainees from different fields of study.

Special Advanced Training.—Arrangements should be made to enable *outstanding* trainees to go abroad to work with an acknowledged master, in their respective fields of study, for at least one year and to visit wokrers in other countries and in other universities on completion of their period of study. This should be regarded as part of the training necessary to develop the very best men. It also provides a basis for future international cooperation and raises the standard of endeavour to an international, rather than narrow national, level.

The Fields of Training.—In view of the advances made in both the pure and applied aspects of medicine, and opportunities for advancement resulting therefrom, as well as new problems which they have created, it is suggested in connection with the teacher training programme that the following teaching fields be covered :—

A trainee would be expected to cover the subjects under *one* main field (indicated by Roman numbers), but in the case where there are positions available for specialization within a field (*e.g.*, lectureship or professorship in bacteriology or parasitology in the field of microbiology) the trainee would spend further time on the speciality.

I.—*Anatomy* :—

(*a*) Anatomy—
- (*i*) Histology,
- (*ii*) Descriptive Anatomy,
- (*iii*) Neural Anatomy,
- (*iv*) Racial Anatomy,
- (*v*) Anthropology.

(*b*) Developmental Morphology—
- (*i*) Embryology and genetics,
- (*ii*) Pos tnatal growth, maintenance and repair,
- (*iii*) Decline and degeneration.

II.—*Physiology* :—
- (*i*) Systemic Physiology,
- (*ii*) Human (or organism) Physiology,
- (*iii*) Biostatistics.

III.—*Biochemistry* :—

(*a*) Biochemistry proper—
- (*i*) Physical Chemistry,
- (*ii*) Organic Chemistry,
- (*iii*) Physiological Chemistry.

(*b*) Normal Nutrition.

IV.—*Pharmacology* :—
- (*i*) Experimental or normal Pharmacology,
- (*ii*) Therapeutics or Pathological Pharmacology,
- (*iii*) Pharmaceutical Chemistry,
- (*iv*) Chemotherapy.

V.—*Pathology* :—

(*a*) Pathology proper—
- (*i*) Morbid Anatomy and Histology,
- (*ii*) Experimental Pathology,
- (*iii*) Clinical Pathology.

(*b*) Forensic Medicine.

(*c*) Microbiology—
- (*i*) Parasitology and Medical Zoology.
- (*ii*) Bacteriology,
- (*iii*) Immunology and Serology,
- (*iv*) Mycology.

VI.—*Clinical Medicine* :—

(*a*) General Medicine—
- (*i*) Communicable diseases.—
  - (*a*) Malariology,
  - (*b*) Other Vector spread diseases,
  - (*c*) Non-vector spread diseases—
    tuberculosis,
    venereal diseases etc.
- (*ii*) Metabolic diseases,
- (*iii*) Cardio-vascular diseases,
- (*iv*) Respiratory diseases,
- (*v*) Diseases of the digestive system,
- (*vi*) Diseases of haematopoioetic (blood forming) system,
- (*vii*) Diseases of the ductless glands (endocrinology),
- (*viii*) Dermatology (diseases of skin);

VII.—*Neurology and Neuro-Surgery*

VIII.—*Psychiatry.*

IX.—*Surgery* :—

(*i*) General Surgery (including abdominal surgery).
(*ii*) Orthopaedic Surgery,
(*iii*) Chest Surgery,
(*iv*) Surgery of ear, nose and throat,
(*v*) Ophthalmology,
(*vi*) Reconstructive (Plastic) Surgery,
(*vii*) Genito-Urinary Surgery.

X.—*Anaesthetics.*

XI.—*Diseases and conditions peculiar to women.*

(*i*) Obstetrics,
(*ii*) Gynaecology.

XII.—*Paediatrics.*

XIII.—*Radiology* :—

(*i*) Radiation and Physiotherapy,
(*ii*) X-Rays,
(*iii*) Radium.

XIV.—*Prophylactic Medicine* :—

(*a*) Epidemiology and Vital Statistics,
(*b*) Social Pathology,
(*c*) Hygiene—
  (*i*) Health Education,
  (*ii*) Control of Diseases—
    a. communicable,
    b. nutritional,
    c. mental.
(*d*) Public Health Administration,
(*e*) Maternity and Child Welfare,
(*f*) School Health,
(*g*) Occupational Health—
  (*i*) Industrial,
  (*ii*) Agricultural.
(*h*) Public Health Engineering.

XV.—*Social Medicine* :—

(*i*) Applied Epidemiology,
(*ii*) Social Pathology,
(*iii*) Social Surveys,
(*iv*) Social Experiment,
(*v*) Study of Health *per se*.

XVI.—*History of Medicine.*

XVII.—*Collegiate School of Nursing* :—

(*i*) Vocational Nursing,
(*ii*) Public Health Nursing,
(*iii*) Nursing Administration,
(*iv*) Nursing Education,
(*v*) Nursing Research & Experiment.

XVIII.—*Dental Medicine.*

°Trainees must be provided with an adequate stipend throughout their course of training, all teachers must be full-time employees.

APPENDIX 47.

The need for an Institute of the History of Medicine in India.

Henry E. Sigerist.

It is no longer necessary to stress the value of studies and of academic instruction in the history of medicine. Since 1905, the year when the Leipzig Institute was founded by Karl Sudhoff, one country after another has developed similar institutions. They became cultural centres from which the field of historical studies was broadened considerably and medicine was greatly enriched.

A survey undertaken in the United States in 1937 revealed that courses in the subject were offered in 54 of the 77 medical schools then existing[1]. It must be admitted, however, that in the majority of these schools the standard of instruction in medical history was far below their general academic standard, and that only very few of them engaged in serious research. Nevertheless, the mere fact that 70 per cent. of all medical schools thought it advisable to include medical history in the curriculum shows that the significance and possibilities of the subject have been recognized.

I.

In a country such as India a centre of studies in the history of medicine is more necessary than anywhere else, because in India ancient and mediaeval medicine are still alive and are practised on a large scale. It is no exaggeration to say that the overwhelming majority of the people of India receive medical care only from indigenous practitioners. They either follow the principles of the *Ayurveda*—the Science of Longevity—as it developed in the Atreya school of Brahmin doctors over two thousand years ago or they are adepts of the *Unani*, or Greek school of medicine which actually is Arabo-Persian medicine—to mention only the two major systems.

The fact that indigenous medicine plays such a very important part in the life of the Indian people is frequently minimized or even ignored. And yet it represents a very tangible reality that must be faced openly whenever plans are elaborated for improving the health conditions of the country particularly since its popularity is growing rather than diminishing. New indigenous schools are being founded. They are subsidized by the government in several provinces. The Osmania University of Hyderabad has a Medical College which is a Unani Medical College. The Medical Practitioner's Act of Bombay of 1938 admits graduates of indigenous schools to the Medical Register.

At first sight it seems strange that these ancient indigenous systems are able to compete with modern scientific medicine. It was not strange in the 17th and 18th centuries when the two worlds first entered into contact. At that time European medicine was developing new theoretical foundations but in practice, in the treatment of disease it was hardly more effective than Greek, or Hindu, or Arabic medicine. But today ? Nobody can deny that scientific medicine during the last hundred years has made tremendous strides. Bacteriology and immunology have permitted us to combat communicable diseases most effectively and to eradicate many of them. Modern surgery is able to save thousands of human lives that would have been lost

[1] *Bulletin of the History of Medicine, 1939, 7 : 627-662.*

only fifty years ago. Pediatrics, more than any other branch of medicine, is responsible for the decrease of death rates and for the greater life expectancy. The treatment of internal diseases, for a long time the step-child of medicine, has greatly progressed also. The discovery of hormones and vitamines made it possible to attack certain diseases at the root, and in the last few years the sulpha-drugs and penicillin have proved to be formidable weapons in the treatment of many formerly deadly diseases. How then was it possible for indigenous medical systems to survive ?

The reasons are not difficult to find. India with its 19 University Medical Colleges and 19 Medical Schools has produced physicians trained in scientific medicine, but not enough of them. It is impossible for 55,000 doctors to give medical care to a population of nearly 400 million, particularly since economic necessity forces the majority of doctors to practise in the cities, while 90 per cent. of the people live in rural districts. The sick villager therefore, has hardly any choice ; if he wants help and advice he must have recourse to an indigenous practitioner.

There are Rural Dispensaries operated by the provincial or local governments, staffed with scientific doctors. These dispensaries, however, are as a rule very poorly equipped ; the doctor sees hundreds of patients every day, so that he has not the time to examine the sick and to treat him individually. He can at best practise a primitive type of first-aid and bottle medicine which are hardly apt to demonstrate the superiority of Western medical science. The salary of the dispensary doctor, moreover, is so miserably small, that he is forced to make a living through private practice. But the average villager is too poor to pay for his services and to purchase his imported chemical drugs. And so the sick call on the indigenous practitioner who himself is a villager, whose drugs consist of native herbs that are cheap, and whose theoretical views conform with the religious views of the patient.

The indigenous systems of medicine, both Ayurveda and Unani, are strongly philosophical in outlook, although their original character has degenerated in many ways. The theory of the three elements in one, of the four humors in the other, are attempts to visualize the organism as a microcosm and to place it into relationship with the macrocosm of the universe. Hindu philosophy as it crystallized in the system of the Tantras, looks at the human body and at the universe as a manifestation of divine substance and energy, a concept the elements of which can be traced back to Vedic traditions. The three elements wind, bile, and phlegm are symbols of the aerial, fiery, and liquid forces of life-energy. Throughout its history Ayurvedic medicine was an attempt to interpret the phenomena of life and death, of health and disease, philosophically.

Unani medicine, on the other hand, through the Persian and Arabic tradition goes back to Galenic, Hippocratic and Pythagorean views and having passed through the filter of Avicenna, it acquired many elements of Aristotelian philosophy.

Indian culture is deeply imbued with philosophy, and this is why not only illiterate villagers but highly educated men sometimes prefer the indigenous systems to scientific medicine and rise to their defence. They claim that the medicine that came from the West is too mechanical, that it is soulless, that it has no philosophy, that it is foreign to Indian thought, while the indigenous systems are deeply rooted in the religious and philosophical traditions of the country, and represent one aspect of the general attitude towards nature and man.

There is another most powerful force that is backing the indigenous systems of medicine, Indian nationalism. The country is in a period of transition. After centuries of stagnation the people of India are awakening to new life and look into the future. A regular Rennaissance is taking place. A nation which had developed a great civilization at a time when we in the West were still savages, which for certain historical reasons too complex to be discussed here declined, is now reasserting itself.

At such a historical moment the people look back with pride to their cultural heritage. It is the common ground on which they stand. The classical literature is published in new editions. The cinema instead of filming gangster stories revives Sakuntala. Young girls dye their palms and soles with henna and re-enact old dances. The country's archaeological remains are carefully preserved, tactfully restored, and visited by thousands. Hindus and Moslems, Sikhs and Parsis alike admire the paintings of Ajanta, the sculptures of Elefanta, the temples of Madura and the palaces of the Mogul emperors. They justly feel, beyond communal lines, that they are theirs.

And when it comes to medicine, they remember their history also. Just as we look to Hippocrats as the father of medicine, they look to their own classics to Caraka, Susruta, Vagbhata who collected and preserved the medical lore of their time; or to the classics of Arabic and Persian medicine who in the early Middle Ages had assimilated, enriched and systematized the Greek tradition and were far ahead of their colleagues in the West. Indians remember with pride that in the 3rd century B. C. Asoka, the great Buddhist Maurya king had provided medical services for rich and poor, for men and animals, throughout his empire; that he had hospitals built in town and country, for men and animals, at a time when there was not a single hospital in the Western world.

This great medical tradition is not dead. It is alive like the Vedas, the Upanisads or the immortal Meghaduta, like the Qoran, the Bustan and the Gulistan. It is no wonder that India reasserting itself is backing up its own systems of medicine.

II.

So far, so good—but medicine is neither poetry nor philosophy. It is a craft, a techne as the Greeks called it, with an eminently practical purpose. Its goal in every country is the same, namely to promote the people's health, to prevent disease, to restore health when it has broken down, and whenever necessary, to rehabilitate the former patient so that he may remain a useful member of society.

The question naturally arises: have the indigenous systems succeeded in establishing a high standard of health in India? The question can be answered scientifically because health conditions can be measured and can be expressed in figures. When we consult these figures and find that in 1937 the general death rate was 22·4, the infantile mortality rate 162, and the average life expectancy only 27 years, we must conclude that health conditions are very bad in India today, infinitely worse than in countries that have universally accepted scientific medicine.

It is well known that health conditions are determined not only by the status of medicine but also by the general standard of living—which in India is extremely low. When people have not enough to eat, constantly suffer from malnutrition and live in a poor sanitary environment they are always threatened by disease and have little resistance to offer. Scientific

medicine, however, has forged weapons with which it is possible to eradicate diseases even under poor living conditions. The numerous diseases carried by water and food can be brought under control by general public health measures. The various methods of immunization permit the prevention of diseases which today still take a heavy toll of life in India, and the new methods of treatment can save thousands of human lives that would be lost otherwise. The incidence of malaria, India's great curse, could be reduced considerably if the doctors had enough auxiliary personnel available that they could steer and guide.

If Indians take a historical attitude toward their indigenous systems of medicine, they will be justly proud in realizing what a great advance these systems represented *at their time*, in anitiquity and the Middle Ages. They brought many effective drugs to the people, many valuable dietetic and even surgical treatments. But Indians will also realize that conditions have greatly changed. The new science that developed from the 16th century on created a new foundation of medicine, a new anatomy, physiology and pathology on the basis of which new systems of public health and of clinical medicine could be developed with infinitely more effective methods of prevention and cure. The theory of medicine, the views we have of the causes and mechanisms of disease are not a luxury but determine our actions. The concepts of wind, bile and phlegm or of blood, phlegm, yellow bile and black bile represented useful working hypotheses at their time, but the new science has demonstrated that the actions attributed to them are the result of speculation and do not correspond to a reality, while it is possible to explain the phenomena of health and disease with concepts of biology, physics and chemistry in an infinitely more satisfactory way, one that permits testing in experiments and has led to brilliant practical results.

Indians, therefore, who have the welfare of their people at heart, who want them to live without being constantly fettered by the bonds of disease, cannot but accept scientific medicine and work to promote it and to see it applied on a nation-wide scale so that it may reach every single village. It, of course, is not easy to apply modern science to one field of human endeavour while other basic functions of social life such as agriculture and industry remain mediaeval and women are kept in purdah. And this raises the question : is it at all desirable for a nation to accept science and technology or would it be better for the people to remain static, to live poor and contented, bearing sufferings with resignation, leading a contemplative life and hoping for a better lot in the hereafter ? The question seems justified in view of the evil use that has been made of science in recent years. It is futile, however, because there is no choice. No nation can expect to survive in the present world as a nation unless it accepts science with all its implications. And science in itself is neither good nor evil. It is an instrument in the hands of man, and it is he who is good or evil.

India, after centuries of stagnation, is awake today and has expressed its determination to free the people from age-old bonds. Thousands of young men and women are flocking to the universities, hundreds of them travel abroad for post-graduate study. Already India has produced physicists, chemists and biologists of world renown. Industries are being developed. The great rivers dammed by engineering skill, will produce water for irrigation and power for new industries that will absorb the rural surplus population. India possesses the manpower and natural resources needed to make it a prosperous country in which the people will be free to produce new cultural values as they did in the past. This may seem Utopian in

view of the many traditional barriers of caste and religious taboos that tend to divide the people, but the example of other countries has shown that however rigid the traditional superstructure may appear, it breaks down very rapidly where there is a strong popular movement that attacks the basic elements of economic and social life.

In the same way scientific medicine must be developed. Promising beginnings have already been made and plans are elaborated for the future. The line to be taken is clear. The country needs more and better trained personnel, researchers, teachers, doctors and legions of auxiliary personnel. It needs more and better equipment. And it needs first of all a system of health services that will make full use of the personnel and equipment available and will bring it into the reach of everybody.

Scientifically trained doctors will gradually replace the indigenous practitioners. The argument that indigenous medicine is cheaper will no longer hold, because medicine will not be a service that is sold to the people in the open market, but a public service to which they are entitled, one that is financed on public funds. Similarly the argument that indigenous drugs must be preserved because they are within the financial means of the villager will vanish, because drugs will not be sold but distributed to those who need them, and the development of a state-owned and operated pharmaceutical industry will considerably reduce the cost of production of modern scientific drugs.

Such a development will obviously take a long time, and meanwhile the country will continue to have tens of thousands of indigenous practitioners, registered and non-registered, trained in schools and trained through apprenticeship. It would be worthwhile to study whether these practitioners could not be used during the period of transition as auxiliary personnel. In some of their schools students are given a sprinkling of scientific medicine, and while it is obviously impossible to combine modern medical science with ancient and mediaeval theories, it should be possible to train these students for a few specific functions such as the combating of malaria, vaccination and other immunizations, the supervision of wells and latrines and other public health measures.

III.

It seems to me that in such a period of transition an Institute of the History of Medicine could play a very important part.

The Government of India plans to establish a National Medical College, a model medical college that would become a national centre of medical research and a training ground for highly qualified physicians, specialists, and academic teachers. This undoubtedly is an excellent plan that will give a tremendous stimulus to the development of medicine in India and will raise the standard of medical education and consequently of practice.

The opportunity of creating a new school is one that occurs very rarely and presents great opportunities that should not be missed. It is extremely difficult to modernize an old school that is burdened with the weight of a great tradition. A business enterprise that does not keep abreast of the time soon collapses, but out-moded universities may carry on indefinitely, much to the detriment of the country.

Whoever founds a new medical college today must be fully aware of the changes that have occurred in medicine and society and of the social and economic structure into which the products of the college, the physicians,

will have to fit. It would be a mistake therefore merely to copy a British or American pattern. When the Johns Hopkins School of Medicine was opened in Baltimore in 1893 it was neither a replica of a British, French or German school. It had taken over elements of the various European systems but had blended them to form a new pattern that was in many ways better than the existing ones, and this is one reason why the school became so influential.

India is neither Britain or America. It is a tropical country, and its social and economic structure is totally different. And while the medical science in which students are instructed is basically the same all over the world, the application of this science varies a great deal. In small countries such as Switzerland or Holland the problem of rural medicine hardly exists because cities are never far away and hospitals and specialists can be reached easily. In tomorrow's India the great majority of all doctors must be scientifically well trained physicians prepared to practise in rural districts among poor people under an organized system of medical services. But they will have to be more than mere therapists ; they will have to be teachers and social workers, leaders and friends of the people, leading them to a healthier and happier life. An Institute of Social Medicine should, therefore, be considered.

The new college, I am well aware, intends to be primarily a centre of research and a training ground for specialists and teachers. It is just for that reason that it should emphasize the social aspects of medicine. Research is needed not only in the science but also in the sociology of medicine—and in India perhaps more than anywhere else. It is a fallacy to believe that the application of scientific results takes care of itself. It does not, as we have found in every country, and the most brilliant discoveries are wasted unless they can be applied on a mass-scale. The teachers who will come from this college, on the other hand, no matter whether they are physiologists or surgeons should all carry that social outlook into whatever colleges they may be called. The National College will set a new pattern of medical education in India, one that undoubtedly will be followed by the other schools.

Similarly, since India is confronted with the problem of indigenous medical systems and will be so far a long time, an Institute of the History of Medicine could greatly help to clarify the situation, and I should like to outline briefly what I would consider the major tasks of such an Institute.

The history of medicine is both history and medicine. It is a historical discipline like the history of art or the history of philosophy. It helps to give us a more complete picture of the history of civilization, because it is obviously not unimportant to know what diseases affected the people in the past, what they did not protect and restore their health and what thoughts guided their action.

But the history of medicine is also medicine. By analyzing developments and trends it permits us to understand a situation more clearly and to act more intelligently. We all know that success or failure of our medical work depend not only on the scientific knowledge we possess but also on a great variety of other non-medical factors, on economic, social, religious, philosophical, political factors that are the result of historical developments. Unless we are aware of them and understand them many of our efforts will be wasted.

An Institute of the History of Medicine in India will devote its researches primarily to the history of Indian medicine and of medicine in India, from the Vedic period to our days. It will investigate the medical heritage of the country dispassionately and critically, not in order to prove a point. It will endeavour to reconstruct and envisage the medical past of India from the perspective of history, in relation to and as part of the general civilization of the various periods.

In order to be able to write history the historian must first proceed analytically investigating and interpreting historical sources which in many cases have to be made available first. The chief medico-historical sources are texts and the Indian medical literature still requires a great deal of purely philological work. Many texts still have to be edited critically and many have to be translated. One of the most important Sanskrit medical classics, Vagbhata's Astangahrdayasamhita was translated only a few years ago. I am convinced that there are still many medical texts buried in manuscripts that have not yet been touched. Our Johns Hopkins Institute possesses a collection of Sinhalese medical manuscripts written on palm leaves that have not been edited and therefore have obviously never been translated or evaluated.

The study of texts will not be limited to books written in Sanskrit, Prakrit or Pali but will be extended to Arabic and Persian books and to those written in vernacular languages. Sources of medical history, however, are not only medical books. Other books, religious, theological, philosophical, and histories, biographies, memoirs, etc., may contain valuable information concerning health and medical conditions at a given time. It will, therefore, be necessary to canvass the entire Indian literature for medical data. Dr. D. V. S. Reddy of Andhra Medical College in Vizagapatam has shown how the Rock Edicts of Asoka are a rich source for our knowledge of medical conditions at the height of the Maurya empire. There can be no doubt that such books as the Ain-i-Akbari and the autobiographies of the Mogul emperors contain a great deal that is of medical interest.

Books, however, are not the only sources of medical history. The antiquities, sculptures, paintings, buildings, instruments and other objects of archaeological research may be able to shed light on health and medical conditions and must therefore be consulted. The elaborate bathing facilities in Mogul palaces were a luxury, to be sure, but also had hygienic consequences and it mattered a great deal what kind of drinking water people had available and how they disposed of their sewage.

In a country like India where traditions have persisted tenaciously through the centuries and where the Middle Ages are still alive in many ways, the medical folklore is another rich historical source that must be consulted. This, however, must be done cautiously and critically because folklore always is a big hodgepodge in which ancient, mediaeval and modern views are inextricably mixed.

The Institute will not limit its studies to India because India was never isolated from the rest of the world. The Aryan conquerors came from the northwest and brought views and concepts that belonged to the common stock of all Indo-European races. Babylonian civilization radiated far over Asia, and India had intercourse with China at an early date. The caravan was a factor that greatly contributed to the spreading of stories, ideas, knowledge and skills all over the continent. Invading

armies invariably had surgeons who brought knowledge to foreign lands and learned from them. The influence of Alexander the Great's campaign is reflected not only in the sculptures of Gandhara but in many ways, and Indian drugs were sold in Alexandria. The close relations of India with the Islamic world need not be emphasized here and from the 16th century on India had inter-relationships with Europe. The Institute therefore will study the history of Indian medicine as part of the universal history of medicine.

The critical evaluation of historical sources permits us to reconstruct the past. In the case of medicine it permits us to ascertain—if sufficient sources are available—what diseases afflicted the people in various periods, how their lives were affected by them, what they did to maintain and restore their health and what thoughts were guiding their actions.

The history of medicine differs basically from most other historical disciplines that examine happenings and phenomena which occurred once, because it is the history of a craft, of techniques and skills. We therefore want to know not only what people did in the past to maintain and restore their health, but also whether they did a good job or not, whether their treatments were effective or not. This is why historians of medicine must not only be historians but physicians as well. Ancient treatments can be repeated, the efficacy of drugs can be tested in experiments.

The Institute will therefore investigate the indigenous medical systems not only for their ideological content, not only as aspects of India's ancient and mediaeval civilizations and as end products of a long development : it will also endeavour to evaluate their pratical achievements. This obviously does not mean that the historical institute should have a laboratory for the testing of drugs. Certainly not, but the historian of medicine on the basis of his studies of the classical literature and of field work would be able to point out which treatments and drugs should be tested by the pharmacologists and clinicians of the College. This would permit us to preserve and to incorporate into our scientific system of medicine whatever is found to be of value in the indigenous systems. And it would also permit the objective refutation of claims that are not justified.

Thus the Institue, besides being a humanistic centre, would also have some practical functions that could be extended in many directions. A physician can cure an individual case of syphilis without any knowledge of history, but whoever plans a campaign against venereal diseases must take a great many non-medical factors into account and will be confronted with social, economic and religious conditions that are the result of historical developments of which he should be aware. Health education is wasted unless it is somehow combined with education in citizenship which is impossible without history. I should think that at the present moment when India is planning to develop its medical services and to bring health to the villages, the cooperation of a physician who can think in terms of history, should be extremely valuable. And the Institute by collaborating with the departments of social medicine, hygiene and public health should be able to make important contributions.

IV.

There is another field in which the Institute of the History of Medicine as a department of a National Medical College could render great services, the field of education. It could greately enrich the curriculum.

Whenever a country adopts scientific medicine it usually does it with great enthusiasm and is inclined to throw everything overboard that is not science. The result is that physicians are produced who are highly trained technicians without any education, high grade specialists who see only one small section of medicine and have lost sight of the goal. Medicine is not a natural but a social science. Its target is to keep men adjusted to their social and physical environment as useful members of society, and to readjust them when prevention has broken down. Methods of the natural sciences have to be applied to this end, but the goal is social and the physician should always keep this broad purpose in view.

If I am correctly informed, the general education of the average medical student in India—as in many other countries—is rather scanty. From the moment he leaves the secondary school his training is along scientific lines. He has the added handicap that he is instructed in a foreign language—by necessity in view of the diversity of Indian languages. He may be familiar with English literature from Chaucer to Kipling and hardly know his own classics. I met Indians who admitted that they would find it difficult to deliver a lecture in their own Urdu or Bengali or whatever their mother tongue may have been. This peculiar situation obviously tends to divorce the small educated upper class from the mass of the people. But if there is one profession that must be close to the people it certainly is the medical profession, because the doctor must not only be a therapist but a teacher and friend of the people he serves.

Instruction in medical history, if properly conducted, could greatly contribute to the training of an educated physician. It would teach the student history, the history of his own country but also the history of the world with a bias on medicine that would bring the subject much closer to him. It would teach him to look at modern medicine from the perspective of history and to see it in all its economic, social, religious and philosophic implications, as the result of a long development, as a dynamic process. He would soon find that scientific medicine has a philosophy also. We too look at the human body as a microcosm in the midst of the microcosm. The same elements that constitute the organism are found in the outside world, and the same physico-chemical forces are acting in both. The physician thus trained would have a much clearer idea of the task of medicine and of the part he is called upon to play in society.

Such instruction would also help to develop the spirit that must animate the physician in his work. He must realize that medicine is not a means of becoming rich but a service to the people. The same splendid spirit that drove an elite of medical students to volunteer their services during the recent Bengal famine must permeate the entire medical corps at all times. Only in such a way will it be possible to carry out an ambitious programme and to bring health to the villages.

The Johns Hopkins School of Medicine is often looked upon as the example of a school that succeeded in creating a new pattern of medical education in its country by raising entrance requirements and emphasizing scientific instruction in the laboratory and at the bedside of patients. This is correct but one should also remember that the men who made the School famous were not only great scientists but humanists also. Osler, Welch, Kelly Halsted were keenly interested in the history of medicine and never missed an opportunity to impart historical knowledge to their students. In 1890, one year after the opening of the Hospital, three years before the School opened

its doors, they founded the Johns Hopkins Medical History Club which is today in the fifty-fifth year of its activities. Osler's historical and philosophical essays will remain a source of inspiration long after his scientific papers and his textbook are forgotten. When the School was opened in 1893 the new curriculum included a course in the history of medicine that was given by John Billings, one of the great pioneers of American medicine, who drew up the plans for the Hopkins Hospital and was largerly responsible for the new curriculum. And at the end of his career William Welch, in 1929, created the Johns Hopkins Institute of the History of Medicine, the first of its kind in the United States. I think these facts are highly significant and provide food for reflection.

V.

After all that has been said, it is easily apparent what the structure of such an institute must be. It will require personnel and equipment. Since it will not be possible to find a physician well trained in methods of historical research who masters equally well Sanskrit, Greek, Arabic and Persian, the Institute will need a staff of at least three scholars who will work as a cooperative group. One of them, a student of Sanskrit and other Indian languages will specialize on Hindu medicine. The second will devote his researches primarily to the Moslem phase of Indian medicine and will therefore be an expert in Arabic and Persian medicine, while the third will be a general medical historian and will study the history of Western medicine in its relations with the East and the rise of scientific medicine.

The staff will require tools for reserach, that is, collections and among them primarily a collection of books. The library of the Institute will include the basic medico-historical literature—books and journals—medical texts in the best editions and translations available, and as many reference books as possible. It should also include a number of non-medical books, such as basic books on political, social and economic history, the history of philosophy, religion and other disciplines, books that are constantly needed for general orientation.

The Institute will in addition collect other documents pertaining to the medical history of India, manuscripts, photographs, portraits, objects such as instruments, etc. and it may consider the creation of a museum of indigenous drugs.

Whoever organizes such an Institute today must endeavour to relieve the research and teaching staff of administrative burdens as much as possible. University administration is in many countries the most wasteful and cumbersome of all administrations in that it uses highly trained scientists and scholars for the solution of petty administrative problems that could be handled by general office workers just as well if not better, and this greatly reduces the efficiency of a faculty. The National Medical College will obviously have a strong Medical Library and it would be advisable to build the institute of the History of Medicine in connection with or as an annex to the Library, so that the technical administration of the Institute could be handled by special employees of the Library. This would permit the staff of the Institute to devote all their efforts to reserach and the teaching of students.

This is not the place to discuss matters of budget, but there can be no doubt that the cost of erecting and operating such an Institute would be much smaller than that of any other department of the College. And the returns could be immeasurably great, to the College and to the country.

APPENDIX 48.

Division of Provincial Nursing Councils Registers.

NURSES REGISTER.

A-1 Senior Certificated general-trained nurse. (Trained in her own province).

A-2 Senior Certificated general-trained nurse. (Trained in other provinces in India).

A-3 Senior Certificated general-trained nurse trained ex-India.

B-1 Junior Certificated general-trained nurse. (Trained in her own province.)

B-2 Junior Certificated general-trained nurse. (Trained in other provinces in India.)

C-1 Senior Certificated nurse trained in Women & Children. (Trained in her own province).

C-2 Senior Certificated nurse trained in Women & Children. (Trained in other provinces.)

D-1 Junior Certificated nurse trained in Women & Children. (Trained in her own province.)

D-2 Junior Certificated nurse trained in Women & Children. (Trained in other provinces.)

E-1 Senior Certificated male nurse. Trained in his own province.

E-2 Senior Certificated male nurse. Trained in other provinces.

B-1 Junior Certificated male nurse. Trained in his own province.

F-2 Junior Certificated male nurse. Trained in other provinces.

MIDWIVES REGISTER.

A-1 Nurse-Midwife (Senior double certificated) trained in her own province.

A-2 Nurses-Midwife (Senior double certificated) trained in other provinces.

A-3 Nurses-Midwife (Senior double certificated) trained ex-India.

B-1 Nurse-Midwife (Junior double certificated) trained in her own province.

B-2 Nurse-Midwife (Junior double certifiacted) trained in other provinces.

C-1	Midwife senior certificated.	Trained in her own province.
C-2	,, ,,	Trained in other provinces.
C-3	,, ,,	ex-India.
D-1	Midwife junior certificated.	Trained in her own province.
D-2	,, ,,	Trained in other provinces.

HEALTH VISITORS REGISTER.

A-1	Nurse health visitors.	Trained in her own province.
A-2	,, ,,	Trained in other provinces.
A-3	,, ,,	Trained ex-India.
B-1	Health Visitors	Trained in her own province.
B-2	,,	Trained in other provinces.

APPENDIX 49.

Roll of Assistant Nurses—A.C.I. 1532, Nurses Act, 1943.

1. Under the authority of the Nurses Act, 1943, the General Nursing Council for England and Wales forms and keeps a roll of Assistant Nurses and makes rules for the formation, maintenance and publication of the Roll and regulates the conditions of admission to the Roll.

2. The " Rules and Schedules to the Rules for Existing Assistant Nurses and Assistant Nurses with Intermediate Qualifications framed by the General Nursing Council for England and Wales under Part I of the Nurses Act, 1943 " have now been published.

3. Under those Rules every person who desires to obtain admission to the Roll as an Existing Assistant Nurse must apply within two years after 4th February 1944, on which date Part III of the Rules came into operation. Applicants must produce evidence that they have had specified periods of whole-time training or experience before 17th March, 1943 in the nursing of the sick under the supervision of trained nursing staff in a hospital or institution.

4. Those who are not qualified to obtain admission to the Roll as an Existing Assistant Nurse must apply before the date on which Rules relating to training and examination made under the Act come into operation. This date has not yet been decided but in all probability will be 31st December, 1946. Such applicants must produce evidence that before the date on which the rules relating to training and examination come into operation, they have had specified periods of whole-time training or experience in the nursing of the sick under the supervision of trained nursing staff in a hospital or institution.

5. Every R.A.M.C. other rank, A.T.S. auxiliary, V.A.D. member, or any other army personnel with nursing and midwifery training, or experience, who desires to apply for admission to the Roll of Assistant Nurses, should study the Rules referred to in para. 2 above, copies of which can be obtained from the General Nursing Council for England and Wales, 23, Portland Place, London, W. 1. (Price 1*s.* 0.) In the case of medical units it is suggested that one or more copies be obtained by the O.C. Unit by applying to C. 2 (*c*) (Books), War Office and that the rules regarding admission to the Roll be explained to all interested personnel.

6. It is important that applications for admission to the Assistant Nurses Roll be received at the General Nursing Council for England and Wales before the expiration of the periods of grace referred to above.

(A summary of this A.C.I. is No. 113 in the series " Notice Board Information ".)

APPENDIX 50.

Composition of the Proposed Central Nursing Council.

1. *President of the Council.*—Director General, Indian Medical Service, in the first instance, and later elected by the Council from amongst its members.

Members.

2.	Chief Lady Superintendent, Auxiliary Nursing Service, Member & Secretary, Office of the D.G., I.M.S.	1
3.	The Assistant to the Surgeon General (Nursing), Madras	1
4.	One Certified Nurse representing training schools for nurses deputed by each Provincial Nursing Council	10
5.	A senior member of the Nursing Profession working in each of the following areas— Delhi Province, N.W.F.P., Baluchistan and Central India	4
6.	President of the Trained Nurses Association of India	1
7.	Director of the School of Nursing Administration ..	1
8.	Chief Principal Matron, Medical Directorate	1
9.	The Lady Superintendent, Lady Reading Health School, Delhi	1
10.	The Chief Lady Superintendent, Lady Minto's Indian Nursing Association	1
11.	The Public Health Commissioner with the Government of India	1
12.	The Director of Maternity and Child Welfare, Indian Red Cross Society	1
13.	The Administrative Medical Officers or the Directors of Public Health in 10 Provinces	10
14.	4 members nominated by the Governor General-in-Council, 1 of whom must be Registered Nurse (Ward Sister) and 1 Health Visitor : the other 2 preferably ladies with distinguished records of service for the advancement of women's interests	4
15.	1 member of the Educational Service, preferably Inspectress of Schools	1
16.	It will be seen that this membership includes 23 members of the nursing profession, 12 members of the medical profession exclusive of the President, and that wider aspects of advancement of women and education is also secured.	

It should not be a matter of great difficulty to provide a complete and representative Executive Committee from its members.

APPENDIX 51.

Composition of the Centeral Pharmaceutical Council.

A PRESIDENT

Eleven members—one nominated from each Provincial Council.

In addition, representatives of the medical profession should be included and it will be essential to ensure adequate representation of the pharmaceutical teaching profession.

A permanent Secretary and probably a permanent legal adviser will be required.

Composition of a Provincial Pharmaceutical Council.

A President, to be elected by the members at their first meeting.

14 members representing the pharmaceutical trade, education and other pharmaceutical interests. These members should be, in the first instance, elected by the teaching institutions, local pharmaceutical bodies and chambers of commerce. One member should be a medical practitioner.

A Permanent Secretary.

APPENDIX 52.

PHARMACY AND POISONS ACT, 1933.

Removal of Pharmacists from Register (U.K.)

(1) If a registered pharmacist, or a person employed by him in the carrying on of his business has been convicted of any such criminal offence, or been guilty of such misconduct as, in the opinion of the *Statutory Committee, renders him, or in the case of an employee, would, if he were a registered pharmacist, render him unfit to be on the register, the committee, after making inquiry into the case, may, subject to the provisions of this Act, direct the registrar to remove the name of the pharmacist from the register.

(2) If the Statutory Committee thinks fit in any case so to do, it may, either of its own motion or on the application of the person concerned, direct the registrar to restore to the register, either without fee or on payment of such fee, not exceeding the fee payable on registrations as a pharmacist, as may be prescribed by byelaws, any name or entry which has been removed from the register ;

Provided that, where an appeal to the High Court against the removal of a name from the register has been dismissed by the High Court, a direction under this sub-section in respect of that name shall not take effect unless approved by the Privy Council.

(3) The power of the *Council to remove members from the Society and the power of the Privy Council to direct the removal of names from the register shall cease, but nothing in this section shall affect the provisions of ten, eleven and twelve of the Pharmacy Act, 1868, with respect to the erasure from the register of names and entries in the cases to which those sections respectively relate.

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*NOTE.—The 1933 Act established the Statutory Committee and vested in it certain of the powers previously held by the Council as a whole.

APPENDIX 53.

CATEGORIES AND TYPES OF MEDICAL AND ANCILLARY PERSONNEL THAT WILL B AVAILABLE ON DEMOBILISATION.

CATEGORY I—MEDICAL OFFICERS (MALE & FEMALE)—

TYPES—

"A" *Those with Higher Qualifications such as* F. R. C. S. M. S. .. M. R. C. P. M. D. .. M. R. C. O. G. D. P. H. D. M. R. E. D. O. .. D. O. M. S. D. L. O. D. P. M. D. O. G. .. D. B., etc., etc.	*Types of Employment for which suitable*— (*a*) General Medical employment .. (*b*) Public Health work and Administration .. (*c*) Specialist appointment on the staffs of teaching hospitals. (*d*) Higher teaching posts in Medical Colleges and Schools. (*e*) Research work .. .. (*f*) Superintendents of Mental Hospitals, Sanatoria (T. B. Leprosy), Institutes of Hygiene and Pathological Laboratories. (*g*) Lectures in Physiology at Universities or Colleges appointments in Public Health Departments or in clinical Laboratories.	In recognised cadres of Government Service, Municipal Boards, District Boards, Indian States, Railway Medical Service, Dufferin Fund Service, Mission Hospitals and Large Public hospital.

"B" *Recognised as Specialists in one or other of the following subjects*:—

Anaesthatics .. .. .. Dermatology .. .. .. Gynaecology .. .. .. Hygience including Malariology, Medicine. Mental Diseases .. .. .. Opthalmology .. .. .. Diseases of E. N. & T. .. .. Pathology .. .. .. Radiology and Surgery .. .. Malariology .. .. .. Neurology .. .. .. Venereology .. .. .. Physiology	Recognised Specialists with higher academic qualifications will fall automatically under Type "A". Recognised Specialists without higher academic qualifications will fall automatically under Type "C".

"C" *Graded Specialists* in one or the other of the subjects mentioned under Type "B".	(*a*) Public Health Work including Malariology (*b*) Research work (*c*) Teaching posts in Medical Colleges and Schools (*d*) Specialists in non-teaching hospitals (*e*) Mental Asylums (*f*) T. B. Sanatoria, hospitals and Clinics (*g*) Leper Asylums, hospitals and Clinics (*h*) V. D. hospitals and Clinics (*i*) Institutes of Hygiene and Pathological Laboratories. (*j*) Junior lecturers in Physiology and appointments in Clinical Laboratories.	In recognised cadres of :— Government Service, Municipal Boards, District Boards, Indian States, Railway Medical Service, Dufferin Fund Service, Mission Hospitals, and Large Public hospitals.
"D" *Graduates*	(*a*) General Medical Employment (*b*) School Medical Officers (*c*) Child Welfare and Maternity Centres (*d*) Staff appointments in Sanatoria (T. B. and Leprosy). (*e*) Subsidized Practitioners and M. Sc. for Rural Development Schemes. (*f*) Tea Gardens (*g*) Shipping Companies (*h*) Factories and Mills	In recognised cadres as mentioned above.
"E" *Licentiates* (with L. P. H. or D. T. M. qualification).	(*a*) Public Health Work (*b*) Rural and Urban M. O. Hs. (*c*) School Medical Officers (*d*) Child Welfare and Maternity Centres	In recognised cadres of :— Government Service, Municipal Boards, District Boards
"F" *Licentiates* "G" *Nutrition experts*	Employment as under "D". Appointments in Public Health Organizations, Relief Organizations, Physiology Departments of Universities, Colleges, large hospitals, Research Laboratories.	Indian States, Railway Medical Service, Mission Hospitals, and Large Public hospitals.
"H" *Blood Transfusion Officers.*	On Blood Transfusion work in Universities, etc.	
CATEGORY II—DENTAL OFFICERS (I.A.D.C.)—		
TYPES : (1) Those with U. K. qualifications (2) Those with Indian qualifications	Teachers in Medical College and Schools & Appointments as Dental Officers in Hospitals.	

CATEGORY III—NURSES—

TYPES :	*Types of employment for which suitable.*	
1. *I.M.N.S. (T) & (R)— A.I.N.S.R. and Trained Nurses of the A. N. S.*		
These consist of 'personnel fully trained in the Medical and Surgical Nursing of men, women and children, and are state registered either in India, the U. K., or the British Dominions and Colonies.	1. Inspectresses of Nursing Services under Government. 2. Appointments as :— (*a*) Matrons of hospitals (after further special training) (*b*) Sister Tutors (after further special training) .. (*c*) Sisters. .. .. (*d*) Staff Nurses .. .. (*e*) Health Visitors (after further special training) (*f*) District Nurses .. .. (*g*) Sanatoria Nursing Staff .. .. .. (*h*) Infectious Diseases hospitals Nursing Staff .. (*i*) Nurses in Infant, Child Welfare and Maternity Centres (after further special training). (*j*) Nurses in T. B. Clinics (Female). (*k*) Nurses in V. D. Clinics (Female). (*l*) Nurses in Mental hospitals (after further special training).	In recognised cadres of :— Government Service, Indian States, Railways Medical Service, Municipal Boards, District Boards, Dufferin Fund Service and Public Hospital Private Hospitals and Nursing Homes.
2. *Male Nurses—*		
These are fully trained Nurses registered by the Provincial Nursing Registeration Councils and directly recruited as V. C. Os. in the Army.	(*a*) Staff Nurses .. .. (*b*) Health isitors (after further training) .. (*c*) Sanatoria Nursing Staff .. .. .. (*d*) Nurses in Infectious Diseases hospitals (Male) (*e*) Nurses in T. B. Clinics (Male) .. .. (*f*) Nurses in V. D. Clinics (Male) .. . (*g*) Nurses in Mental hospitals (after further training).	In recognised cadres of :— Government Service, Indian States. Railway Medical Service, Municipal Boards, District Boards, and Public Hospitals. Private Hospitals and Nursing Homes.
3. Uncertificated partially trained female Nurses employed in the Army under the A. N. S. Scheme.	Only suitable as Probationer Nurses in hospitals which are training schools to enable them to complete their training. When certificated, they can be employed as detailed under item 2 of Type 1.	

4. *Specialists Improvers* (Male)— These consist of a class educated up to the 9th standard who have received further Army training.	Syllabus of the training as at Appendix " A " ..	Suitable for employment as Probationer Nurses in hospitals which are training schools to enable them to complete their training and obtain civil registration. When certificated, they can be employed in the appointments mentioned for Type 2.
5. *Nurses Orderlies*—		
(*a*) With Military Nursing Diploma (24 months' course).	Syllabus of the training as at Appendix " B "	A certain number of this class will be suitable as Probationers in training schools to qualify as Male Nurses and to enable them to complete their training as Civil Male Nurses. When certificated, they can be employed in the appointments mentioned for Type 2.
(*b*) With 3rd Grade Nursing certificate.		Do. and for hospitals employing uncertified Nurses.
(*c*) With 2nd Grade Nursing Certificate. (9 months' course).		For Hospitals employing uncertified Nurses.
(*d*) With 1st Grade Nursing Certificate		Do.
(*e*) Special Treatment Orderlies, (V. D.) Must have 2nd Grade Nursing Certificate and 3rd Class Roman Urdu Certificate of Examination with clinical training in V. D. Course 3 months.	Syllabus of the training as at Appendix "C".	For V. D. Hospitals and Clinics.
(*f*) Mental Nursing Orderlies. 3 months' course)—Education and Nursing Certificate as under (*e*).	Syllabus of the training as at Appendix " D " ..	For Mental Asylums and Clinics.
(*g*) Operations Room Attendants .. (4 months' course.) Nursing certificate as under (*e*). 3rd Class certificate of education in English.	Syllabus of the training as at Appendix " E " ..	For large general hospitals.
(*h*) Ophthalmic Orderlies. (3 weeks' course.) Minimum qualifications required 2nd Nursing Certificate & 3rd Class English Certificate of Education or A. V. VI.		
(*i*) Dental Orderlies		
(*j*) Masseure		

CATEGORY IV—TECHNICIANS—

TYPES:

1. *Radiographer*— Class III Four months' intensive training. Class II Six months' training .. Class I Nine months after completion of the Course for Class II and passing that examination.	Syllabus of the training as at Appendix "F"	(*a*) X-Ray Departments of hospitals, or (*b*) For further training necessary for such appointments in the Civil.
A. Classes accepted for the above courses : (*a*) Directly recruited V. C. Os. (*b*) Specialist Improvers.		
2. *Laboratory Assistants*— Class III Four months' intensive training and examination. Cases II After Six months, intensive training and satisfactory result. Class I After nine months Do.	Syllabus of the training as at Appendix "G"	(*a*) Employment in Pathological Laboratories in Colleges and Institutes, and Hospitals Laboratories, or (*b*) For further training necessary for such appointments in Civil.
Classes accepted for the above courses :— (*a*) Directly recruited V. C. Os. (*b*) Specialist Improvers.		
3. *Compounders*— Classes accepted by the Army— (1) Fully certificated from Provinces		For employment as Compounders, etc.

APPENDIX "A".

INDIAN ARMY MEDICAL CORPS (NURSING SECTION).

1. Indian Hospital Corps was transferred en-bloc to the I.A.M. formation of the latter—3 April, 1943.

2. A. I. (I) Special 114/43 is the authority for Terms of Service, pay, etc. of all ranks and categories of the I.A.M.C.

3. *Nursing Section* (Composition).

Viceroy Commissioned Officers, V. C. Os.—Subedar-Majors, Subedars, Jemadars. The V. C. Os. include Radiographers, Laboratory Assistants, and Male Nurses. Suitably qualified men can be directly recruited as V. C. Os.

Male Nurses. Qualifications required.

Civil Nursing Diploma and registration in Provincial register.

Directly recruited Male Nurses are automatically graded as Grade I for Grade Pay of Rs. 60 p.m. in addition to pay of rank.

Laboratory Assistants and Radiographers.

B. Sc. with special subjects, equivalent scientific qualifications or practical experience.

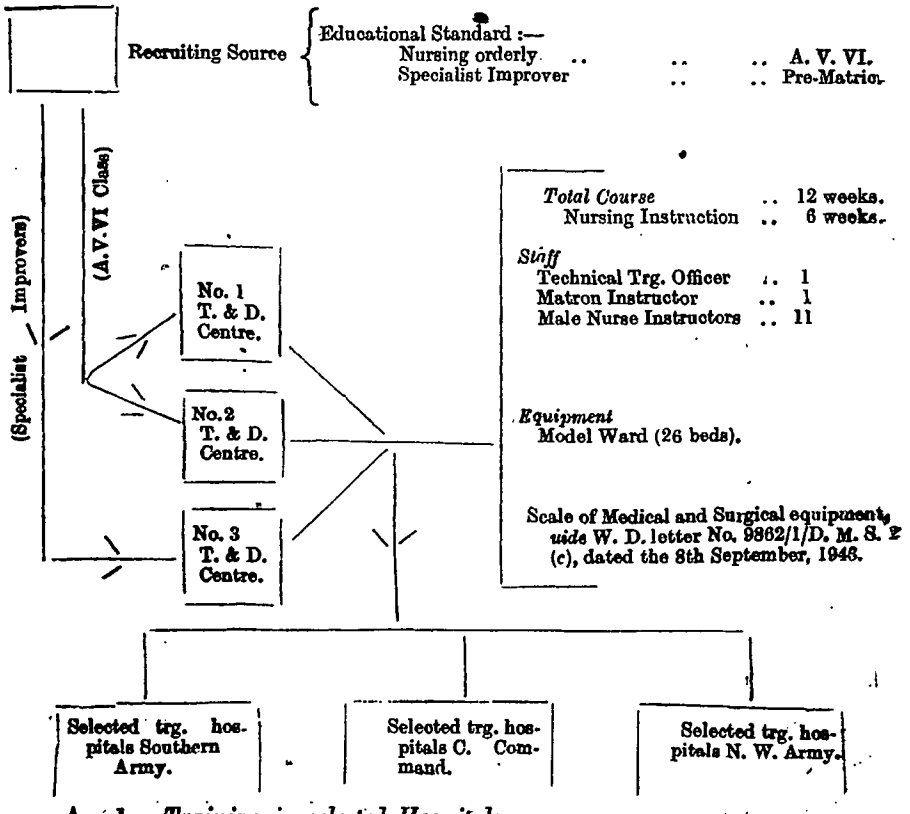
Radiographers in possession of Certificate of Rediographical Assistant Madras are also graded as Grade I.

Other Radiographers and Laboratory Assistants appear before a Trade Testing Board and on the results are graded I, II or III according to their qualifications.

Rank and File.—Minimum educational standard required for recruits to the Nursing Section is Anglo-Vernacular VI.

Pay.—Rs. 18 p.m. baisc pay (Sepoy) and training allowance of Rs. 18 p.m.

Specialist Improver Class.—In addition to the ordinary Nursing Orderly a new Class called Specialist Improver Class has been introduced. These personnel are recruited from the pre-matriculation class and received, in addition to basic pay of Rs. 18 training allowance of Rs. 32, p.m. which gives them a total of Rs. 50 p.m. They intended for special training as Laboratory Assistants, Radiographers and Male Nurses and for eventual promotion to V. C. O. rank.


Recruiting Source
Educational Standard :—
Nursing orderly .. .. .. A. V. VI.
Specialist Improver .. .. Pre-Matric.
(Specialist Improvers)
(A.V.VI Class)
No. 1 T. & D. Centre.
No. 2 T. & D. Centre.
No. 3 T. & D. Centre.
Total Course .. 12 weeks.
Nursing Instruction .. 6 weeks.
Staff
Technical Trg. Officer .. 1
Matron Instructor .. 1
Male Nurse Instructors .. 11
Equipment
Model Ward (26 beds).
Scale of Medical and Surgical equipment, vide W. D. letter No. 9362/1/D. M. S. 2 (c), dated the 8th September, 1943.
Selected trg. hospitals Southern Army.
Selected trg. hospitals C. Command.
Selected trg. hospitals N. W. Army.

A. 1. ***Training in selected Hospitals.***

(*a*) **1st and 2nd Nursing Certificates :—**

1st Nursing Certificate .. .. .. 2 months.

2nd Nursing Certificate .. .. .. 4 months.

(*b*) ***Staff.***

Training Officer appointed by O. C. hospital, *vide* these Headquarters letter No. 10001/D. M. S. 1(*f*) of 12th April, 1943.

Hospital Matron assisted by selected Sister (M. N. S.)

Two Male Nurse Instructors.

(*c*) ***Equipment.***

Vide (Under issue).

(*d*) ***Syllabus.***

Vide these Headquarters letter No. 10001/D. M. S. 1(*f*), dated the 12th April, and 16th August, 1943.

2. 3rd Nursing Certificate :—
6 months' training.

3. Military Nursing Diploma :—
9 months' training.

B. Specialist Improver class undergo training upto 2nd Nursing Certificate in selected hospitals in Southern Army, after which they are available for posting to selected hospitals in other Armies/Command, *vide* letter No. 10001/11/D. M. S. 1 (*f*) of 27th January, 1944.

C. A. V. VI standard are posted to selected hospitals in all Armies/Commands less Eastern Command and 14th Army. They are retained in these hospitals upto the 2nd Nursing Certificate on completion of which they are available for posting to other hospitals and field medical units, *vide* No. 10001/D. M. S. 1 (*f*) of 10th November, 1943.

APPENDIX "B".

SYLLABUS FOR MILITARY NURSING DIPLOMA (AT THE END OF 24 MONTHS).

Surgical Lectures.—

1. Nursing of compound fractures. Effects of pressure. Care of sprains and dislocations.

2. Nursing of Ear, Nose and Throat cases. Preparation for operation and after nursing care. Syringing of ears.

3. Nursing of eye cases. Preparation for operation. After care. Feeding and nursing of eye injuries.

4. Preparation of cases for various examinations. Cystoscopy. Sigmiodoscopy. Rectal wash out. Care of Haemorrhoid cases and other Rectal operation cases.

5. Preparation for X-Ray examination. X-Ray treatment. Radium.

6. Preparation for anaesthetic table. Special requirements for local general, spinal, rectal, intravenous anaesthesia. Preparation for Lumber puncture.

7. Preparation of operating theatre. Cleansing of theatre. Cleansing of theatre prior to operations. Use of steam sterilizers. (High pressure) Preparation of ligatures and sutures, tubes, dressings, plugging and lubricants.

8. Instruments in use for various operations. Methods of sterilizing same. Treatment of electrical appliances in common use.

9. Sharp instruments, their care and preservation. Method of sending specimens for examination.

10. Special method packing drums for operation theatre use. Treatment of gloves and other rubber appliances.

11. Duties of Orderly in operating theatre. Qualities to be displayed, observation, promptness, quiet efficiency to be elaborated. Position of patient, etc.

12. Nursing of the more severe burns and scalds.

13. Inflammation, suppuration, ulceration gangrene.

14. Nursing of cases of injuries to and diseases of joints.

Medical Lectures.—

1. Nursing of acute infectious fevers. Scarlet fever, Measles, Chickenpox, Mumps, Small-pox.

2. Nursing of Diphtheria, complications which may arise. Nursing of Tracheotomy cases.

3. Nursing of Cerebro-spinal meningitis. Lumber puncture. Injections of anti Toxins.

4. Nursing of diseases affecting the nervous system, Meningitis, Myelitis, Apollexy, Epilepsy, Hysteria, Neurasthenia.

5. Nursing of tropical disease, Enteric (Typhoid fever) Paratyphoid.

6. Nursing of tropical diseases continued, Typhus, Plague, sandfly fever, Dysentery, Malaria.

7. Nursing of heat stroke, severe cases of heat exhaustion. Dengue cholera, sprue.

8. Nursing of diseases of the pancrease and liver. Jaundice, liver abscess, diabetes. Special diets.

9. Diseases resulting from Faulty nutrition, Beri-beri, scurvy.

10. Nursing of diseases of the mouth, throat and stomach.

11. Nursing and treatment of skin cases, ringworm, eczema, scabies, impetigo.

12. Administration and action of drugs.

Lecture and Instruction.

1. Surgery of the abdomen, amputations. Haemorrhage ; primary reactionary and secondary. The healing of wounds.

2. Shock, intravenous infusions. Blood transfusion.

3. Burns. First aid treatment ; treatment in hospital.

4. Contents of Nos. 1 and 2 Field Ambulance Panniers. Surgical intruments description, sterilization and cleaning of.

5. Definitions—hygiene, sanitation, conservancy. Causation of disease.

6. Environment in relation to hygiene ; clothing, climate, work, rest, personal hygiene. Diseases resulting from environment.

7. Germs-origins, species. The chain of infection. Prevention of and protection against disease.

8. Water supplies—water-borne diseases. Food supplies, food diseases and their prevention.

9. Excremental diseases.

10. Droplet infections.

11. Diseases transmitted by animals.

12. Diseases transmitted by personal contact-exposure-injury.

13. Disinfection.

14. Chemical warfare. Nursing and treatment of gas casualties. Defensive measures.

15. Poisoning. General lines of treatment.

16. Medicines and their administration. Action of some of the commoner drugs.

17. Enemata ; remedial applications ; baths, packs.

18. Diseases of the heart and pericardium.

Syllabus for 3rd Grade Nursing Certificate (at the end of 15 Months).

Surgical.—

1. Qualifications of a good Surgical Nurse. Asepsis, Sterilization of appliances used. Preparation of syringes, lotions, lubricants, tubes, plugging, drains, etc.

2. Nursing of clean and dirty surgical cases. Method of arranging work. Correct method of carrying out a dressing, clearing up, etc. Use of drainage tubes changing same. Removal of sutures.

3. Preparation of patient for (*a*) Anaesthetic (*b*) Operation. Special preparation for various cases, and special after care required.

4. Special preparation for bone operations to be elaborated salines, rectal intravenous, continuous drip.

5. Preparation for and after nursing of cases under Spinal anaesthesia. Complications which may arise.

6. Elaboration of preparation and after nursing of abdominal, head, chest, rectal and operations.

7. Spinal injuries, admission of, nursing of and special operations connected therewith.

8. Nursing of cases of severe gunshot wounds. Methods of resuscitation. Care of septic wounds. Treatment of shock.

9. Haemorrhage, Primary, Secondary. Signs and symptoms. Treatment.

10. After nursing of amputation cases. Use of tourinquet. Blood transfusion.

11. Nursing of gastric cases. Feeding Diet scales.

Medical.—

1. Ward management. Admission of patients. How extras are drawn. Hygiene and feeding of patients.

2. Observation of the sick elaborated. Importance of clear and concise reports. Position in bed, movement of patients. Disposal of the dead.

3. Diets in various diseases. Laying of trays. Preservation of food.

4. Enemata stimulant, sedative, nutrient, drip continuous, details of appliances used.

5. Incontinence retention, suppression of urine. Nursing cases of Cystit Pyelitis, Nephritis.

6. Urine testing. Demonstration.

7. Nursing of diseases of the respiratory system Pneumonia, Bronchitis, Pleurisy, Pleural affusion.

8. Potai's Aspirator, Aspiration of fluid. Demonstration of Aspirator.

9. Nursing care of Heart cases and acute rheumatism.

10. Nursing of gastric cases. Test Meal. Stomach lavage, Barium Meal.

11. Nursing cases of Tuberculosis. Feeding. Disinfection of utensils.

Lectures to be delivered by Medical Officers in Conjunction with the Syllabus of Training.

1. Burns and scalds, shock, loss of consciousness and fits.

2. The eye and ear (elementary).
Suffocation. Electric shock and special similar conditions. Effects of cold.

3. Drowning ; rescue and resuscitation. Poisoning. Infectious diseases. Personal hygiene of the nursing orderly. Disinfection.

4. Revision of skeleton ; composition of structure of bone, cartilage, ligaments and joints. Surgical anatomy and surgery of head, face and spine.

5. The muscular system. Structure and function of muscles. Muscular development. Internal work done. Energy and heat.

6. The cavity of the thorax, situation and functions of contents. The systemic circulation, blood vessels ; composition and function of the blood. The spleen.

7. The respiratory system ; air and food passages. Mechanism of respiration ; the pulmonary circulation. Surgery of the chest, empyema tracheotomy.

8. The cavities of the abdomen and pelvis. The digestive system, alimentary tract, teeth, glands, peristalsis, food and nutrition ; the protal circulation.

9. Diseases and surgery of the rectum ; comparison of natural and artificial feeding. The urinary system and prostate.

10. Suppression, incontinence and retention of urine. Catheters and catheterization (to include practical instruction in the passage of soft rubber catheters). Urine testing.

11. The nervous system ; brain and spinal cord ; nerve cord and endings ; the sympathetic cystem ; reflex action. Surgery of nerves.

12. Anatomy and functions of the organs of the special senses ; eye ; nose, tongue, ear and larynx ; removal of foreign bodies ; elementary surgery.

13. The lymphatic system ; lymph, lymphatic glands and channels. Sepsis.

Syllabus for 2nd Grade Nursing Certificate (at the end of 9 months).

Elementary Nursing.—

1. Ward management, ventilation, methods of cleaning and care of ward equipment ; admission of patients, disposal of Kit; taking of patient's particulars, etc. Giving of bedpans and urinals.

2. Disposal of soiled linen and dressings. Disinfection of infected linen, etc. Hospital etiquette and discipline.

3. Bedmaking. Special beds, Rheumatism, Heart Fracture, Operation, Accident. Lifting and turning of patients. Preparation of air and water beds (to be demonstrated).

4. Admission of stretcher cases. Hygiene of patient. Washing, feeding and treatment of helpless cases. Pressure sores and their prevention.

5. Observation of the patient. Position, expression, colour, secretions, excreta, expectoration, appetite, dilirium, sleep.

6. Observation of pt. condt ; Temperature, pulse, respirations, charting same. Recording of intake and output in special cases. Method of accurate note taking. Reports, verbal and written.

7. Administration of medicine, inhalations, administration of oxygen. Lotions, varieties and strengths. Weights and Measures in common use, domestic equivalents. Demonstrations.

8. Administration of gargles, painting of throats. Application of eye lotions and drops. Use of.

9. Preparation of various kinds of poultices, antiphlogistine, fomentations medical and surgical. Hot water bottles their uses and dangers. Use of ice bags, method of filling and applying. Soap and water enema. Demonstration.

10. Pyrexia and Hyper-pyrexia, nursing of, Rigors treatment of, Nursing of non-infectious fevers.

11. Responsibilities regarding saving of specimen of urine, stools, sputum, vomit. Care of foreign bodies discovered in specimens. Disposal of infected specimens. Demonstration.

12. Nursing of infectious cases. Isolation. Disinfection of linen, excreta, etc. Personal belongings of patient and how to render all free from infection. Disinfection of hospital equipment and utensils.

13. Methods of reducing temperatures. Sponging. Baths various cleaning, medicated, hot air, local.

14. Surgical cleanliness. Cleansing and sterilization of instruments, mackintoshes, catheters, gloves, Dressing trolley requirements. Drums, how to pack and use. To be demonstrated.

Lectures to be delivered by Medical Officers in Conjunction with the Syllabus of Training.

2nd Grade Nursing Certificate.

1. The construction of the human body. The skeleton. Recognition and description of the principal bones ; cartilages, ligaments and joints.

2. The muscular system. Structure and function of muscles. The cavities formed by the skeleton and their contents.

3. The circulatory system ; the heart and blood vessels ; the blood. The spleen.

4. The respiratory system ; the organs of respiration, their structure, functions. Composition of air. The air and food passages.

5. The digestive system ; the alimentary canal and digestive glands the teeth. The digestion of food.

6. The nervous system ; the brain and spinal cord, motor, sensory and sympathetic nerves.

7. The excretory system. The lymphatic system.

8. Wounds and their treatment. Antisepsis and asepsis. Dressing and healing of wounds.

9. First Field and Shell Dressings. Instruments, Contents of Surgical Haversack and Medical Companion.

10. Haemorrhage.

11. Fractures and their treatment.

12. Fractures (continued) ; special fractures and splints. Dislocations and sprains.

Syllabus for 1st Grade Nursing Certificate.

This can be obtained at the end of the 2 weeks' Recruits Training ; duration of the Course 6 weeks.

SYLLABUS.

Elementary Anatomy and Physiology and First Aid.
Types of Hospital cases.
Hospital ward furniture and appliances.
Ward administration—bed linen, etc.
Bed-making, etc.,—moving of patients.
Drugs—methods of administration. Poisons.
Poultices, fomentations, plasters etc.
Fevers—taking of temperature. Charts.
Taking and recording of pulse and respiration.
Toilet—bed sores.
Disposal of excreta (Field Service Hygiene notes).
Special appliances (enemas, catheters, stomach tubes).
Instruments and dressings used in the ward.
Sepsis and asepsis—wound infection.
Antiseptics, sterilization and disinfection.
Baths and sponging of patients.
Restoration methods—shocks.
Nursing emergencies—haemorrhage, collapse.
Use of Plaster of Paris—plaster technique.
Taking and disposal of specimens for laboratories.

In addition, Lectures and Instruction will be given in the following
Common infectious cases.
Nursing of fever cases.
Nursing of skin cases.
Nursing of special cases—heart, pneumonia, etc.
Pre-and post-operative treatment.
Burns—nursing and care of.
Nursing of fracture cases.
Ear, nose and throat and eye cases.
Diets and feeding.
Observation of patients.
Use of enema, catheter, stomach tube, etc.
Urine testing.
Management of cases of heat-stroke.

APPENDIX "C".

Special Treatment Orderlies (Indian).

Duration of Course : 3 months.

To attend the Course, candidates must have a minimum qualification as noted below :—

(*a*) 2nd Grade Nursing Certificate.

(*b*) 3rd Class Roman Urdu Certificate of Education.

At the end of the Course an examination will be held.

SYLLABUS OF TRAINING—SPECIAL TREATMENT ORDERLIES (INDIAN). CLASS III.

(A) *GENERAL.*—

1. Elementary anatomy and physiology of the genito-urinary tract in the male.
2. General description of venereal diseases.
3. Grouping of patients according to diseases. Latrines and bath accommodation. Ward discipline.
4. Marking and disinfecting clothing. Method of dealing with clothing of venereal patients. Feeding utensils.
5. General duties of a special treatment orderly.
6. Action for the admission and preliminary treatment of a patient suffering from V.D.
7. Procedure regarding continuation of treatment as an out-patient in the army or as a civilian following discharge from the army.
8. Description of a P. T. Room.
9. Duties of the orderly i/c. P. T. Room.
10. Description of common skin diseases, their treatment and nursing.

(B) *SYPHILIS.*—

1. General description of syphilis, causes and mode of infection.
2. Method of taking specimens for laboratory examination.
3. Method and reason for taking blood.
4. General and local treatment with special reference to nursing.
5. Preparation of patient for specific treatment. Method of administration.
6. Duties in the treatment room as regards minor operations, dressings and local applications.
7. Soft Chancre
8. Climatic Buboe } Brief description.
9. Herpes Gentalis

(C) *GONORRHOEA.*—

1. General description of gonorrohea, causes and mode of infection.
2. Treatment with special reference to nursing and care of complications.
3. Description and uses of instruments.
4. Instruction in irrigation room.
5. Prevention and treatment of gonorrhea ophthalmia.
6. Urethrites Simloex
7. Phmiosis and Paraphimosis } Brief description.
8. Venereal Wards

(D) *LABORATORY ROUTINE.—If time permits.*

1. Glass ware—care of glass, microscope slides, test-tubes, etc.
2. The microscope—mechanism, care and maintenance.
3. The Chemical Balance—care and maintenance.
4. Preparation and sterilisation of solutions.
5. Description of trainingin of smears.

Intensive training in V.D. Wards for a period of 12 weeks when not attending lectures.

APPENDIX "D".

Mental Nursing Orderlies (Indian).

Duration of Course : 3 months.

To attend the Course, candidates must have a minimum qualification as noted below :—

(*a*) 2nd Grade Nursing Certificate.

(*b*) 3rd Class Roman Urdu Certificate of Education.

During the period of training, personnel will be employed only in psychiatric wards and will undertake general and specialist nursing duties in these wards.

On the termination of the Course, a report will be submitted.

SYLLABUS.

SECTION A. THE MIND IN HEALTH.

1. *Psychology.*—Definition, mind and body—relationships ; instincts and reflexes ; three aspects of mind ; cognition (knowing), affection (feeling) and conation (striving) ; sensation, perception ; conception. Special sensations ; hearing, vision, smell, taste, skin sensations ; Viscoral ; anaesthetic, apperception ; meaning, ideation ; association of ideas, imagination ; memory ; emotion ; passion, mood temperament ; volition, attention ; complex.

2. The mind conscious and unconscious—repression ; projection ; untrojection ; dreams.

3. Elementary anatomy and physology of C.N.S. brain ; spinal cord peripheral nerves.

SECTION B. THE MIND IN DISEASES.

1. *Psychopahology.*—Definition. Classification ; psychoneurosis, psychosis, psychopethic states, mental deficiency.

2. *Signs and Symptoms.*—

(A) *Physiological.*

(*a*) Sensory ; loss, excess, perversion ; pain.

(*b*) Motor ; weakness, loss, inco-ordination ; tremor ; spasm, rigidity convulsion ; atrophy and phypertrophy.

(*c*) Reflexes.

(*d*) Condition of skin, muscles, bones, joints, circulatory, respiratory, elementary urinary reproductive and endocrine systems.

(*e*) Stigmata of Degeneration.

(*f*) Types of physique.

(B) *Psychological.*

(*a*) Sensation, analgesia, parasthesia, Changes in Visceral sensation.

(*b*) Perception, illusion, hallucinations—types.

(*c*) Ideation, diminution, acceleration, obsessions.

(*d*) Judgment ; delusions.

(*e*) Memory, amnesia—types.

(*f*) Affection, apathy, excess, liability ; prevailing moods ; depression aphoria.

(*g*) Volition and behaviour, diminution, overactivity, ; disorders of behaviour, impulses, mannerisms, degradation.

(*h*) Speech ; mutism, disconnection, incoherence.

(*i*) Combinations of the above terms, as in stupor, confusion, depression.

SECTION C.—

THE EXAMINATION AND NURSING OF MENTAL DISABILITY.

1. Attitude of M. N. O. to patients.

2. Points in examination.

Attitude of patient towards examination ; personal hygiene ; genera i physical condition; loss of weight, physical exhaustion. Heredity, environment ; mental stress and conflict. Recent disease or wounds. Recent history of malaria, dysentery, typhus, infestation, nutritional deficiency ; heat exhaustion, alcoholism ; drug addiction.

3. Management according to clinical condition *e.g.* elated, excited, noisy, destructive, violent, suspicious, resistive, confused, stuperose, depressed.

4. Observation of fits. Differential diagnosis. Malingering.

5. Methods in treatment ; simple psychotherapy (persuasion, suggestion, encouragement), sedatives ; diversional therapy. M.N.Os. duties in : narcoanalysis, continuous narcosis, convulsant therapy, hydrotherapy, pyrotherapy.

6. Feeding of patients, oral, nasal and rectal feeding.

7. Emergencies; attempted suicide, artificial respiration, use of stomach tube ; first aid (*e.g.* arrest of haemorrhage).

SECTION D.

GENERAL DUTIES OF M. N. O.

1. Reception of new patient ; inspection for bruises ; abrasions ; blisters and other signs of injury. Searching of patients for dangerous objects.

2. Ward discipline—general principles.

3. Bathing of patients and rules for baths.

4. Bedding and clothing—inspection, restrictions and precautions.

5. Observations of patients at nights.

6 Arrangements for actively suicidal patients.

7. Use of mechanical restraint.

8. Observation and Reports : sleep, food, weight, bowels and bladder behaviour and habits. Sleep and wieght charts. Medicine (sedative) book.

9. Duties of M. N. O. in connection with transfer, discharge or death of patient. Any forms used in psychatric ward.

APPENDIX "E."

Operating Room Attendants.

SYLLABUS.

GENERAL DUTIES IN AN OPERATION THEATRE.

(*a*) Instruction in the theory and practice of sterilization—the care and use of the commoner types of sterilizers—method of sterilizing various instruments and articles used in the operating theatre and the handling of sterile—cleansing and care of hands and nails.

(*b*) The care, preparation and cleaning of the operation theatre—its annexes and furniture—preparation of patients for operation and supervision of their transfer from, and to the wards.

(*c*) Preparation, use and storage of antiseptics and solutions in use in the theatre—the sterilization and storage of water.

(*d*) Preparation, use and storage of commoner kinds of ligatures and suture material—types of needles and conditions under which various types are required.

(*e*) Preparation of dressings ; swabs, packs etc.; method of arranging and packing drums ; the care and inspection of gloves.

(*f*) Care and supervision of surgical instruments, rubber goods, etc.

(*g*) The responsibilities of the operating room attendant with regard to —

1. The patient.
2. Asepsis in the theatre.
3. Emergency apparatus (tracheotomy, transfusion and infusion sets.)

THEATRE TECHNIQUE & CARE OF PATIENTS.

(*a*) Care of patients during operation ; positions used in various operations ; duties in case of collapse during operations including preparation of transfusion apparatus and saline.

(*b*) Knowledge of contents of the various gas cylinders used in the operating theatre, their distinguishing marks, their care and maintenance; preparation of anaesthetist's table—apparatus required—duties in an emergency—artificial respiration—raising and lowering of operating table—what to do with the tongue.

(*c*) Preparation of patients and instruments required for special operations, *e.g.*, injection of haemorrhoids, varicose veins, cystoscopy.

(*d*) Duties of operating room attendants in connection with the administration of special anaesthesia—position of patients, care of patients durin and after injection—local anaesthesia—solutions used and their strengths.

(*e*) The identification of all instruments likely to be used in the operating theatre and wards, their construction, the method of taking apart and putting together of compound instruments.

APPENDIX "F".

Syllabuses for courses are as follows :—(Subjects as at Appendix A).

(*a*) *Radiographers, Class III.* Four months of intensive training.

1st month.

Subject "A" daily lectures and demonstrations.
Subject "E" lectures and demonstrations and Dark Room Work.

2nd and 3rd months.

Subject "B" daily lectures and demonstrations.
Subject "D" lectures and demonstrations.

4th month.

Subject "D" continued.
Subject "C" and "F" lectures or demonstrations.

The students will also receive instruction in office work and in the forms used and the regulations in force in military X-Ray Departments.

During the course the student will attend regularly at the X-Ray room, to learn the procedure therein.

At the end of this course the student will be required to sit for an examination in the subjects taught, those who satisfy the examiners being graded as Radiographers Class III.

(*b*) *Radiographer, Class II.*

Six months work in the X-Ray Department of a large hospital under a Specialist in Radiology, during which he should receive further instruction in the subjects of his first course and also instruction and lectures in subject "G".

At the end of this six months he will have to pass an examination in the subjects above, for promotion to Radiographer Class II.

(*c*) *Radiographer, Class I.*

A further 9 months work in an X-Ray Department on the completion of which, if recommended by a Specialist in Radiology, he would sit for a further examination for promotion to Radiographer Class I.

APPENDIX "A".

Subject "A".

Physics.

Static electricity. Attraction and Repulsion. Conductors and Insulators, condensers. Electrostatic measurements, Magnetism. Electric currents, direct and alternating. Electro magnetic Induction. Measurements and measuring instruments. Dynamos, electric motors and converters. Atomic physics. Electro magnetic radiations. Wave length and intensity, characteristic radiation. Absorption, scattering and filtration on radiation. Radiation Measurements.

Subject "B".

Electrical supply and distribution. A. C. and D. C. currents. Meters. X-Ray apparatus, Coils and interrupters. Transformers and rectifiers. X-Ray tubes, gas and hot cathode, Valve, Production of X-Rays. Accessory apparatus, meters, switches. Auto-transformers, timers and stabilisers.

SUBJECT "C".

Anatomy and Physiology. Elementary development. Bones and joints. Ossification. Surface markings. Normal appearance on radiographer of bones and of soft tissues rendered opaque.

SUBJECT "D".

Radiography. Positioning. Localisation, stereoscopy. Special examinations. Protection.

SUBJECT "E".

Photography, Photographical Chemistry. Developing and fixing. Dark room technique. Faults in exposure and development. Their causes and cure.

SUBJECT "F".

Types of apparatus used in the Army in India, their construction and characteristics. Causes of and tracing of faults. Running repairs.

SUBJECT "G".

Electro-medical apparatus. Contraction of muscles, effects of Galvanism and Faradism. Heating and its effects. Infra red rays. Ultra violet rays and their effects. Diathermy apparatus and its use.

APPENDIX "G".

Syllabuses of courses are as follows:—

Laboratory Assistant, Class III.—Four months of intensive training. Syllabus at Appendix "A".

At the end of this course the students will be required to sit for an examination in the subjects taught, those who satisfy the examiners being graded as Laboratory Assistants, Class III.

Laboratory Assistant, Class II.—A Laboratory Assistant, Class III after six months continuous employment in a laboratory and if reported on as a satisfactory by the officer in charge laboratory, may be graded as Laboratory Assistant Class II.

Laboratory Assistant, Class I.—Before grading Laboratory Assistant Class I, the individual must have been employed in a laboratory as Laboratory Assistant Class II for 9 months.

Provided the candidates pass the qualifying examination, based on the syllabus at Appendix "B" they will be graded as Laboratory Assistant, Class I.

APPENDIX "A".

Syllabus of Training—Laboratory Assistant, Class III.

Note.—Army laboratory Assistants are not to be judged on their theoretical knowledge of pathology, bacteriology or biochemistry, but primarily on their ability to prepare apparatus, reagents and material with unfailing reliability, so that the officer may have dependable assistant to carry out his work.

The course of instruction should therefore be designed not with the primary intention of teaching candidates bacteriology and biochemistry but rather of teaching laboratory methods and cultivating technique. The training should include, of course, elementary clinical pathology, but with the object of stimulating and maintaining the interest of the trainee.

The following is a syllabus of training for class III laboratroy assistants (pathology):—

1. *Laboratory management.*—Care and custody of equipment.

2. *Sterilization methods.*—Chemical Dry heat. Moist heat. Low temperature. Filtration.

3. *Filters.*—Types of filters. Methods of testing, cleaning and sterlizing. Methods of use.

4. *Microscopy.*—The care and use of the microscope and its component parts. Micrometry. Dark-ground illumination.

5. *Culture media.*—Preparation and cleaning of glassware, etc. Maintenance of sterility. Identification of media. Preparation and standardization of basic media. Preparation of special media in common use.

6. *Stains and staining methods.*—The preparation of stains, and methods of staining, as laid down in the official publication "Laboratory Methods 1932", together with such additions as Field's stain and Pioric acid counterstain for T. B.

7. *Pathogenic micro organisms.*—Basic knowledge of the common pathogenic bacteria and methods of cultivation, including anaerobiasis and the chief characters of *Cl. tetani* and the as gangrene clostridia.

8. *Viruses and rickettsiae.*—General outline only.

9. *Protozoa.*—Recognition of malarial parasites, amoebae, Leishmans dono-van bottles end intestinal flagellates.

10. *Helminths.*—Recognition of the eggs of the common helminth ascarisancy lostoma, enterobius, trichuris, taenia, hymenolepis, schistosom. Mounting and preservation of worms and their eggs.

11. *Haematology.*—Hb estimation. Total red and white cell counts and simple differential counts. Sedimentation rates. Blood grouping.

12. *Serology.*—(*a*) Agglutination.

H & O types; methods (Dreyer's and Felix's); preparation of agglutirating sera.

(*b*) Principles of Kahn and Wassermann tests; preparation of reagents and apparatus.

13. *Vaccine preparation.*—Outline. Preparation of apparatus.

14. *Maintenance of stock cultures.*

15. *Biochemistry.*—Elementary, including urine analysis, gastris analysis blood-sugar and blood urea estimations, Vanden Bergh, cerebrospinal fluid (protein and chlorides), and faeces (fats, fatty acids, bile pigments).

16. *Urinary deposits.*—Simple microscopy.

17. *Histology.*—Preparation of tissue for sections. Cutting and staining of sections.

18. *Post-mortem technique.*

19. *Laboratory animals.*—Care, housing, feeding, breeding and handling of laboratory animals.

20. *Office work.*—Accounting for equipment, compilation of returns registration of specimens and recording results of examination.

APPENDIX " B ".

PART A.

Syllabus of Instruction—Laboratory Assistant, Class I.

1. *Laboratory Management and use of Laboratory apparatus.*

2. *Sterilization Methods.*—Chemical. Dry heat. Moist heat. Low temperature. Filtration.

3. *Filters.*—Types of filters. Methods of testing, cleaning and sterilizing. Methods of use.

4. *Microscopy.*—The care and use of the microscope and its component parts. Micrometry. Dark-ground illumination.

5. *Culture Media.*—Standardization of media. Preparation of the commoner medica, fluid and solid, employed in routine work and also special media for the cultivation and differentiation of:— Conocooci, meningococci, pneumococci, streptococci, tubercle bacilli, diphtheria bacilli, organisms of the colityphoid-dysentery groups, pathogenic anaerobes, etc.

6. *Stains and staining methods.*—The preparation of stains, and methods of staining.

7. *Pathogenic Micro-organisms and Bacteriological diagnosis.*—Study and identification of the following bacteria, special attention being paid to morphology, staining, culture, biochemical reactions and agglutination tests where applicable.

(*a*) *The Pyogenic Streptococci and Staphylococci, the Pneumococcus.*

(*b*) *Meningococcus.*—Methods of isolating, identifying and typing. Cell count of cerebrospinal fluid. Precipitin test. An outline of the Gram-negative cocci occurring as Commensals in the nose and throat.

(*c*) *Gonococcus.*—Methods of isolation.

(*d*) *Diphtheria and Diphtheroids.*—Methods of isolation and identification. Virulence, tests.

(*e*) *Tubercle bacillus and other Acid-fast bacilli.*—Methods of isolation from sputum, urine, pus, and other material. Antiformin method.

(*f*) *Intestinal Gram-negative aerobic bacilli.*—Coli group. Enteric group. Food poisoning group. Dysentery group. Methods of isolation and identification.

(*g*) *Vibric cholerae and allied organisms.*—Methods of isolation, identification and differentiation.

(*h*) *Pasturella pestis.*—Methods of isolation and identification. Preparation of laboratory animals prior to inoculation of suspected material.

(*i*) *Brucella group.*—Methods of isolation and identification.

(*j*) *The Haemophillic Bacteria and allied organisms.*—Methods of isolation and identification.

(*k*) *Wound Infections.*—An outline of the organisms associated with gas gangrene. Methods of anaerobic culture.

(*l*) *Rickettsis group.*—The Weil-Felix reaction.

(*m*) *Pathogenic and Commensal Spirothactes.*—Treponema pallidum, Spirochaema recurrentis, Leptospira icterohaemorrhagiae. Methods of demonstration. Laboratory diagnosis.

8. *Rabies.*—Method of obtaining brain of suspected animal. Preparation of sections from the brain. Mann's method of staining, or William's modification of Van-Gienson's method—(basic fuchsin-methylene blue).

9. *Fungi.*—The preparation of hair or scales for examination.

10. *Protozoology.*—Recognition of malarial parasites, trypanosomes, Loishman-Donovan bodies. Outline and recognition of common intestinal protozoa and cysts. Preparation and staining of films by Mayer's haemalum and Heidenhain's iron.

11. *Helminthology.*—Identification of the following helminths and the eggs :—

Nematodes.—Ascaris lumbricoides, Anhylostomes, Entorobius vermicularis, Trichuris tricniura.

Cestodes.—Taenia solium, Taenia saginata, Taenia granulosa, Hymenopisl hana.

Tromatodes.—Schistosoma haematobium and Schistosoma mansoni. Mounting and preservation of helminths.

12. *Haematology.*—Methods of obtaining blood. Methods of estimating haemoglobin. Fumeration of Red Blood Cells and Leucocytes. Preparation of stained blood films. Recognition of normal and abnormal cells. Deferentail Leucocyte count. Reticulocytes. Examination of blood for parasites. Fratility of the Red Blood Cells. Coagulation Time. Red Cell sedimentation rate. Blood grouping.

13. *Serology.*—Preparation of agglutinating serum. Agglutination tests:—Dreyer's Method and Felix Technique. Agglutinin absorption tests. Precipitin reactions.

Wassermann Reaction.—Outline of the principles of the test. Preparation of all apparatus and reagents.

Kahn Test.—Outline of the principles of the test. Preparation of all apparatus and reagents.

14. *Preparation of Vaccines.*—Method of preparing an autogenous vaccine.

15. *Maintenance of Stock Cultures.*

16. *Preparation of tissues for microscopical examination.*—Cutting and mounting sections by the paraffin method. Massons rapid method. Freezing method.

17. *Mounting and preservation of Museum Specimens.*

18. *Urinary Deposits, including cells and casts.*

19. *Laboratory animals.*—Care, housing, feeding, breeding and handling of laboratory animals.

20. *Custody of, and accounting for, Laboratory equipment.*—Compilation of returns.

PART B.

Cleaning, assembling and construction of apparatus employed for routine chemical or biochemical examinations. Simple glass blowing. Care of all measuring instruments. Use of spectroscope, etc.

Essential principles of Chemistry, Distillation, Filtration, etc. Preparation of standard solutions, indicators, estimation of P. H., etc. Volumetric and gravimetric methods. Chemical examinations in connection with routine diagnostic biochemical tests of:—

Urine, Faeces, Blood, Cerebrospinal Fluid, Gastric contents, etc.

APPENDIX " H ".

Syllabus *of Training for R. A. M. C./I. A. M. C. Other Ranks. Employed in Ophthalmic Units/Centres.*

1st week—

1. Anatomy.
2. Physiology.
3. External Diseases and their treatment.
4. Methods of treatment.
5. Nursing of Ophthalmic Patients.
6. Preparation of Operation Theatre.
7. Preparation of patient for operation.
8. Anaesthetics used.

2nd week—

9. Sterilisation of Ophthalmic Instruments.
10. Sterilisation of eye drops.
11. Ophthalmic Apparatus and its care.
12. Assembly of Ophthalmic Apparatus.
13. Ophthalmic lenses, neutralising of lenses measurements, for Mark III Spectacles, fitting of spectacle frames.
14. Fitting of Artificial Eyes.
15. Records Keeping—(*a*) Card Index. (*b*) Day book. (*c*) Spectacle Preseription Book. (*d*) Operation Book. (*e*) Monthly Returns. (*f*) Army Forms used in Ophthalmic work.

3rd week—

16. Short lecture on care of Electric Ophthalmic Apparatus and writing of same.
17. Revision.
18. Examination.

APPENDIX "I".

TRAINING NURSING SEPOYS AND V. C. O.'S IN MASSAGE AND REMEDIAL GYMNASTICS.

"Syllabus".

The course is planned to give the maximum of groundwork and practical experience in massage, remedial gymnastics and electrical treatment in the period of three months.

Each class consists of a maximum of 20 students.

During the first month there are daily lectures on anatomy, physiology and the theory of massage and exercises including practical instruction.

The last two months are devoted to practical training in the Wards and Department, as well as daily lectures.

Instruction is carried out by qualified C. S. of P. Instructors.

The final examinations will be held at the conclusion of the course and a certificate issued to those students who pass the examinations.

The syllabus of lectures consist of :—

(1) *Anatomy—*

(*a*) A careful study of the bones of the body, their shape and function.

(*b*) The names, origin, insertions and functions of the main muscle and muscle groups.

(*c*) A working knowledge of the joints of the body.

(*d*) An elementary knowledge of the main nerves.

(2) *Physiology—*

The elementary knowledge of the structure and functions of the body and its various organs.

(3) *Theory of massage and remedial gymnastics.*

(*a*) Types of massage and their uses.

(*b*) Its application to wounds, fractures, dislocations, sprains, synovatis, internal derangement of the knee, bruises, scare reheumatic diseases. A. P. M. and nerve lesions.

(*c*) Remedial exercises—value, restrictions and types of movement. Conduct of remedial exercise classes.

(*d*) Technique of breathing exercises.

A.

(4) *Instruction in the use of simple electrical equipment.*

B.

(5) *Simple electrical treatments.*

(6) *Elementary plaster work.*

(7) *Instruction in splints and slings, Exercises, in Plaster splints.* The use of remedial apparatus including slings and pulleys.

(8) *Instruction in English.*

APPENDIX 54,

ESTIMATES OF COST.

Estimates of cost of NON-RECURRING *expenditure during the first five years, second five and first ten years.*

	First five years. Rs.	Second five years. Rs.	First ten years. Rs.
Three-million unit scheme ..	75,16,83,000	1,11,16,87,250	1,86,33,70,250
Malaria Organisation	9,16,800	11,10,000	20,26,800
Tuberculosis	2,42,35,000	3,74,10,000	6,16,45,000
Mental Diseases	1,67,00,000	2,22,00,000	3,89,00,000
Leprosy	1,45,00,000	1,40,00,000	2,85,00,000
School Health	1,32,000	--	1,32,000
Nutrition	6,05,000	--	6,05,000
Professional Education :			
(*a*) (*i*) Upgrading at 27 lakhs, conversions at 77 lakhs and creation at 102·0 lakhs per college including the associated hospitals and training fields—			
24 colleges (9+8+7) during the first five years. 19 colleges (7+3+9) during the second five years.	15,73,00,000	13,38,00,000	29,11,00,000
(*ii*) Accommodation for personnel under training—	1,08,00,000	85,50,000	1,93,50,000
(*b*) Dental Education ..	60,00,000	75,00,000	1,35,00,000
(*c*) Pharmaceutical Education	6,25,000	6,25,000	12,50,000
(*d*) Public Health Engineering	6,00,000	4,00,000	10,00,000
(*e*) Nursing..	4,20,00,000	4,20,00,000	8,40,00,000
(*f*) Improvements to Associated hospitals for training of students during internship ..	48,00,000	38,00,000	86,00,000
(*g*) Medical Research at Rs. 1 lakh per college	24,00,000	19,00,000	43,00,000
(*h*) Hospital Social workers ..			
Expenditure on preliminary surveys in four districts on the basis of cost for the Singur survey (Rs. 16,000 for a population of 62,000)	22,00,000	..	22,00,000
Water Supply—			
(*a*) Rural	10,00,00,000	10,00,00,000	20,00,00,000
(*b*) Urban	10,00,00,000	10,00,00,000	20,00,00,000
Drainage @ Rs. 6 crores per year	30,00,00,000	30,00,00,000	60,00,00,000
Medical Research (General provision, Provinces)	20,00,000	20,00,000	40,00,000
TOTAL NON-RECURRING EXPENDITURE	1,53,74,96,800	1,88,69,82,250	3,42,44,79,050
Estimating the expenditure, recurring and non-recurring, in respect of the Centre, as 6 p.c. in each case of the expenditure for the eleven Provinces together, the figures are as shown below :—			
Centre	9,22,49,808	11,32,18,935	20,54,68,743
British India as a whole ..	1,62,97,46,608	2,00,02,01,185	3,62,99,47,793

ESTIMATES OF COST—*contd.*

RECURRING.

	First five years. Rs.	Second five years. Rs.	First ten years. Rs.
Three-million unit scheme	91,91,46,234	2,10,12,29,620	3,02,03,75,85
Central Directorate :—			
(*a*) Officers	37,00,000	45,50,000	82,50,000
(*b*) Establishment and contingencies	8,00,000	10,00,000	18,00,000
(*c*) Travelling allowance ..	6,25,000	6,25,000	12,50,000
Provincial Directorate—			
(*a*) Officers	2,93,81,550	2,95,46,550	5,89,28,100
(*b*) Establishment and contingencies	44,00,000	50,60,000	94,60,000
(*c*) Travelling allowance ..	46,75,000	46,75,000	93,50,000
Malaria Organisation	2,52,07,610	3,85,01,887	6,37,09,497
Tuberculosis	5,87,71,600	9,94,04,692	15,81,76,292
Mental Diseases	4,86,59,110	9 63,37,810	14,49,96,920
Venereal Diseases	3,16,54,110	4,70,17,292	7,86,71,402
Leprosy	2,86,20,032	6,56,84,356	9,43,04,388
School Health	18,95,630	23,23,827	42,19,457
Nutrition	34,37,126	42,88,185	77,25,311
Professional Education :			
(*a*) Upgrading at 8·25 lakhs, conversion at 17·25 lakhs and creation at 17·25 lakhs per college—			
24 colleges (9+8+7) during the first five years.			
19 colleges (7+3+9) during the second five years ..	16,65,00,000	13,23,75,000	29,88,75,000
(*b*) Dental Education ..	75,00,000	75,00,000	1,50,00,000
(*c*) Pharmaceutical Education	23,00,000	23,00,000	46,00,000
(*d*) Public Health Engineering	7,50,000	5,00,000	12,50,000
(*e*) Provincial Sanitary Boards at Rs. 5,000 per board per year (one board for each province)	2,75,000	2,75,000	5,50,000
(*f*) Nursing	10,38,50,000	10,38,50,000	20,77,00,000
(*g*) Health Assistants ..	31,68,000	31,68,000	63,36,000
(*h*) Hospital social workers ..	5,78,420	..	5,78,420
(*i*) Foreign Scholarships ..	15,00,000	15,00,000	30,00,000
(*j*) Improvements to associated hospitals for the training of interns at Rs. 10,000 per hospital per year	24,00,000	19,00,000	43,00,000
(*k*) Postgraduate medical education at Rs. 50,000 per centre per year	12,50,000	12,50,000	25,00,000
(*l*) Medical Research in colleges at Rs. 0·25 lakh per year per college	30,00,000	23,75,000	53,75,000
(*m*) Scholarships at Rs. 1,000 per year per student for 50 p.c. of the total number of admissions	1,34,40,000	4,98,00,000	6,32,40,000
(*n*) Maintenance charges on total capital expenditure on professional education schemes	1,34,71,500	4,55,93,250	5,90,64,750
Water and Drainage Boards Investigation Units, etc. at Rs. 2·6 lakhs per year ..	13,00,066	13,00,000	26,00,000

RECURRING—*contd.*

	First five years. Rs.	Second five years. Rs.	First ten years. Rs.
Maintenance charges @ 3% per year on capital works in connection with Water Supply and Drainage Schemes ..	3,00,00,000	10,50,00,000	13,50,00,000
Health Education at Rs. 3 lakhs per year	15,00,000	15,00,000	30,00,000
Special Provision for Industrial Health Services	75,00,000	1,00,00,000	1,75,00,000
Medical Research (general provision, Provinces)	50,00,000	50,00,000	1,00,00,000
Maintenance charges on capital works erected in connection with Medical Research ..	1,20,000	4,20,000	5,40,000
Leave reserve at 15 p.c. per year for women and 10 p.c. for men personnel—			
Women	3,55,38,820	7,59,26,782	11,14,65,602
Men	4,27,15,714	7,48,26,896	11,75,42,610
Total ..	1,60,46,30,456	3,12,66,04,147	4,73,12,34,603
On the basis of 6 per cent. of Provincial expenditure, Centre ..	9,62,77,827	18,75,96,249	28,38,74,076
Total for British India ..	1,70,09,08,283	3,31,42,00,396	5,01,51,08,679

APPENDIX 55.

Details of the Three-Million Unit and other Schemes.

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Non-Recurring.

	First five years. Rs.	First ten years. Rs.
I.—Primary units—		
(a) Office of the primary unit		
(b) Housing for the primary unit staff	33,91,60,000	67,84,93,750
(c Primary unit dispensary, building and equipment.		
II.—30-bed hospital—		
(a) building, equipment, and		
(b) accommodation for staff	5,62,57,000	27,71,07,500
III.—Secondary unit—		
Office, housing for staff including mobile dental clinics organisations	3,78,00,000	7,41,95,000
IV.—200-bed hospital—		
Building, equipment and accommodation for staff..	30,79,62,000	31,75,74,000
500-bed hospital	..	46,42,60,000
	74,11,79,000	1 81,16,30,250
Ambulances	1,05,04,000	5,17,40,000
	75 16 83,000	1,86,33,70,25

Primary Unit.
(*Non-Recurring*).

		Rs.	Rs.
I.—			
(a) Office for each primary unit	..	15,000	
(b) Housing for the primary unit staff	..	1,38,750	
(c) Dispensary building and equipment	..	20,000	1,73,750
A. For all the provinces,			
1st year 1080 × 1,73,750	.. .. =	18,76,50,000	
2nd year	.. .. ..	..	
3rd year	.. .. ..	..	
4th year 376 × 1,73,750	.. .. =	6,53,30,000	
5th year 496 × 1,73,750	.. .. =	8,61,80,000	*33,91,60,000*
6th year 341 × 1,73,750	.. .. =	5,92,48,750	
7th year 396 × 1,73,750	.. .. =	6,88,05,000	
8th year 382 × 1,73,750	.. .. =	6,63,72,500	
9th year 414 × 1,73,750	.. .. =	7,19,32,500	
10th year 420 × 1,73,750	.. .. =	7,29,75,000	*67,84,93,750*
II. 30-bed hospital—			
(a) Building and equipment	.. .. =	55,000	
(b) Accommodation for staff	.. ..	84,250	1,39,25
B. For all the provinces—			
1st year 216 × 1,39,250	.. .. =	3,00,78,000	
2nd year	.. .. ..	..	
3rd year	.. .. ..	..	
4th year 188 × 1,39,250	.. .. =	2,61,79,000	
5th year	.. ..	..	*5,62,57,000*
6th year 235 × 1,39,250	.. .. =	3,27,23,750	
7th year 282 × 1,39,250	.. .. =	3,92,68,500	
8th year 274 × 1,39,250	.. .. =	3,81,54,500	
9th year 367 × 1,39,250	.. .. =	5,11,04,750	
10th year 428 × 1,39,250	.. .. =	5,95,99,000	*27,71,07,500*
C.—*Ambulances*—			
2 motor—each 12,000 1 animal driven 2,000 ..	.. 26,000		
1st year 216 × 26,000	.. .. =	55,16,000	
2nd year	.. ..	..	
3rd year	.. .. =	..	
4th year 188 × 26,000	.. .. =	48,88,000	
5th year	.. ..	..	*1,05,04,000*
6th year 235 × 26,000	.. .. =	61,10,000	
7th year 282 × 26,000	.. .. =	73,32,000	
8th year 274 × 26,000	.. .. =	71,24,000	
9th year 367 × 26,000	.. .. =	95.42,000	
10th year 428 × 26,000	.. .. =	1,11,28,000	*5,17,40,000*

Secondary Unit.
(*Non-Recurring.*)

		Rs.	Rs.
III.—(*a*) Office for each Secondary unit	..	..	30,000
(*b*) Housing for the staff of the Secondary unit		..	1,45,000
			1,75,000
2. For all the Provinces—			
1st year 216 × 1,75,000	.. .. =	3,78,00,000	
2nd year		..	
3rd year		..	
4th year		..	
5th year		..	*3,78,00,000*
6th year			
Dental Acco. 216 × 16,000 ..	.. =	34,56,000	
7th year 66 × 1,75,000 ..	.. =	1,15,50,000	
Dental 66 × 16,000	.. =	10,56,000	
8th year 6 × 1,75,000	.. =	10,50,000	
Dental 6 × 16,000	.. =	96,000	
9th year		..	
Dental	..	..	63,90,000
10th year 67 × 1,75,000 ..	.. =	1,17,25,000	..
Dental 67 × 16,000	.. =	10,72,000	6,78,05,000
			7,41,95,000
IV.—200-bed hospital—			
(*a*) Building	7,00,000		
Equipment	1,00,000		
(*b*) Accommodation for the staff	6,25,750	*14,25,750*	
4. For all the Provinces—			
1st to 5th year 216 × 14,25,750	.. =	30,79,62,000	*30,79,62,000*
6th year		..	
Dental staff acco. 216 × 44,500	.. =	96,12,000	
7th year		..	
Dental		..	
8th year		..	
Dental		..	
9th year		..	
Dental		..	
10th year		..	
Dental	=	..	*31,75,74,000*

No new 500-bed hospital is ever created. They are to be conversions from 200-bed hospitals, but as soon as a certain number of 200-bed hospitals is converted into those with 500-beds an equal number of 200-bed hospitals brought into being.

Building	Rs.	17,50,000
Equipment	„	2,50,000
Accommodation for staff ..	„	12,70,000
	„	32,70,000

Non-recurring cost of the 500-bed hospital. — 1st ten years.

1st to 6th year	.. =	*Nil*	
7th year 66 × 32,70,000 ..	.. =	21,58,20,000	
Dental staff acco. 66 × 70,000 ..	.. =	46,20,000	
th year 6 × 32,70,000 ..	.. =	1,96,20,000	
Dental staff acco. 6 × 70,000 ..	.. =	4,20,000	
9th year	.. =	*Nil*	
10th year—			
67 × 32,70,000	.. =	21,90,90,000	
Dental staff acco. 67 × 70,000	.. =	46,90,000	*46,42,60,000*

3-Million Unit.

Primary Unit.

1. (a) Office for the primary unit (non-recurring) .. .. Rs. 15,000

(b) Housing for the primary unit staff (non-recurring).

Primary Unit (40,000).	No.	Floor space of housing for one person.	Total.		Total cost of accommodation for one Unit.
Medical Officer @ Rs. 250—25—500	2	2,000	4,000	22,500 sq. ft. @ Rs. 5 per sq. ft.	Rs. 1,12,500
Public Health Nurse @ Rs. 100—5—120—10—200	4	1,500	6,000		
Nurse @ Rs. 75—5—125 ..	1	1,500	1,500		
Midwives @ Rs. 50—5—100	4	1,000	4,000		
Trained dais @ Rs. 25—1½—40—2—50	4	1,000	4,000		
Sanitary inspector @ Rs. 100—5—150	2	1,500	3,000		
Health assistant @ Rs. 60—5—100.	2	1,000	2,000	8,750 Sq. ft. @ Rs. 3 per sq. ft.	26,250
Clerks @ Rs. 75—5—150 ..	2	1,000	2,000		
Fitter mistry @ Rs. 40—2—60	1	500	500		
Inferior servants— 1 @ Rs. 40—2—60 .. 14 @ Rs. 25—2—55 ..	15	250	3,750		
Pharmacist @ Rs. 40—2—60	1	500	500		
					1,38,750
(c) Dispensary at the primary unit— (non-recurring). Building equipment and lands	..	..	..	..	20,000

30-Bed Hospital.

		Rs.
II. (a)	Building	45,000
	Equipment	10,000
		55,000

(b) *Accommodation for Staff.*—Cost for housing the staff of 30-bed hospital.

	No.	Floor area per head sq. ft.	Total sq. ft.	Rate Rs. per sq. ft.	Total cost.
					Rs.
(1) Medical Officer @ Rs. 250—25—500	1	2,000	2,000	14,000 sq. ft. @ Rs. 5 per sq. ft.	70,000
(2) Nurse 1 @ Rs. 100—5—175 and 7 @ Rs. 75—5—125	8	1,500	12,000		
(3) Health assistant @ Rs. 60—5—100	1	1,000	1,000	4,750 sq. ft. @ Rs. 3 sq. ft.	14,250
(4) Pharmacist @ Rs. 40—2—60	1	1,000	1,000		
(5) Ward attendants (1 male, 1 female) @ Rs. 30—2—50	2	250	500		
(6) Cook @ Rs. 30—2—50 ..	1	250	250		
(7) Sweepers (1 male, 1 female) @ Rs. 25—1—35	2	250	500		
(8) Ambulance drivers @ Rs. 50	3	500	1,500		
				Total ..	84,250

Secondary Unit.

III. *Non-recurring.*

(*a*) Office for the Secondary unit] .. .. Rs. 30,000

(*b*) Housing for the Secondary unit staff.

	No.	Floor rate of area sq. ft.	Total area sq. ft.	Rate of Cost.	Total Cost Rs.
Administrative M. O. @ Rs. 1,000—50—1,250	1	3,000	3,000	Rs. 5	15,000
Deputy A. M. O. @ Rs. 500—30—800 ..	1	2,500	2,500	"	12,500
Assistant A.M.O. @ Rs. 400—30—700 ..	1	2,500	5,000	"	25,000
Assistant P. H. Engineer @ Rs. 400—30—700 ...	1				
Senior Sanitary Inspectors @ Rs. 150—10—250 ..	2	1,750	3,500	"	35,000
Senior P. H. Nurses @ Rs. 150—10—250 ..	2	1,750	3,500		
Head Clerk @ Rs. 200—10—300 ..	1	1,750	3,500	"	17,500
Statistical Clerk @ Rs. 200—10—300 ..	1				
Stenographers @ Rs. 100—5—200 ..	3	1,500	4,500	"	22,500
Clerk (1st Division) @ Rs. 150—10—250 ..	1	1,500	1,500	"	7,500
Clerks (2nd Division) @ Rs. 75—5—150 ..	2	1,000	2,000	Rs. 3	6,000
Inferior servants @ Rs. 25—5—55 ..	5	250	1,250	"	3,750
				Total ..	1,44,750
				or roughly Rs. 1,45,000 per Secondary Unit.	
In the second five years only—			Total		Cost Rs.
Dentist at Rs. 250—25—500	1	2,000	2,000		10,000
Dental Hygienists @ Rs. 80—5—130 ..	2	1,000	2,000		6,000
					Rs. 16,000

Mobile Dental Clinics. (In the second five years only).

Non-recurring expenditure.

	Rs.
Cost of a mobile dental clinic fully equipped (traitor type as in New Zealand).	6,500*
Cost of the towing car	11,000
Extra cost for portable equipments	450
Total ..	17,950
or about ..	18,000

Calculation of total cost.

	Rs.
6th year 216×18,000	38,88,000
7th year 66×18,000	11,88,000
8th year 6×18,000	1,08,000
9th year *Nil*	
10th year 67×18,000	12,06,000
Total	63,90,000

*Such a clinic in New Zealand, cost 320 sterlings eight years ago. For-arriving at the present cost another 50 p.c. has been added.

An ambulance car attached to each 30-bed hospital costs Rs. 12,000.

IV. Non-recurring:

(*a*)—Building	7,00,000
Equipment	1,00,000
	8,00,000

Accommodation for the staff of 200-bed hospital.

(b)—

Personnel.	Number.	Floor area for each sq. ft.	Total floor area sq. ft.		Rate of charge per sq. ft.	Total charge Rs.
Superintendent (Rs. 500—30—800)	1	2,500	2,500			
Medical Officer in charge (Rs. 400—30—700)	3	2,500	7,500			
House Staff (Rs. 250—25—500)	6	2,000	12,000	101,000 sq. ft.	Rs.5/- per sq. ft.	5,05,000
Assistant M. Os. in Charge of Laboratory (Rs. 250—25—500)	2	2,000	4,000			
Nurses	50	1,500	75,000			
Senior Pharmacist (Rs. 60—3—90)	1	625	625			
Laboratory Technicians (Rs. 60—5—100)	3	625	1,875			
Caretaker (animals) (Rs. 40—2—60)	1	500	500			
Laboratory attendants (Rs. 30—2—50)	3	250	750	18,250 sq. ft.	Rs.3/- per sq. ft.	54,750
Pharmacists (Rs. 40—2—60)	6	500	3,000			
Ward attendants (Rs. 30—2—50)	16	250	4,000			
Sweepers (Rs. 25—1—35)	16	250	4,000			
Cooks (Rs. 30—2—50)	8	250	2,000			
Malis (Rs. 25—1—35)	4	250	1,000			
Mistrie (Rs. 40—2—60)	1	500	500			
Clerk (1st Division) (Rs. 150—10—250)	1	1,500	1,500	3,000 sq. ft.	Rs.5/- per sq. ft.	15,000
Stenographer (Rs. 100—5—200)	1	1,500	1,500			
Clerk (2nd Division) (Rs. 75—5—150)	1	1,000	1,000	1,500 sq. ft.	Rs.3/- „ „	4,500
Peons (Rs. 25—2—55)	2	250	500			

200—Bed Hospital—*contd.*

Accommodation for the staff of 200-bed hospital.—contd.

Personnel.	Number.	Floor area for each sq. ft.	Total floor area sq. ft.		Rate of charge per sq. ft.	Total charge Rs.
Senior M. O. (X-ray) (Rs. 400—30—700)	1	2,500	2,500			
Junior M. O. (X-ray)(Rs. 250—25—500)	1	2,000	2,000	9,000 sq. ft.	Rs.5/- per sq. ft.	45,000
Technician (X-ray) (Rs. 150—10—250)	1	1,500	1,500			
Nurses 1 (Rs. 100—5—150) and (1 (Rs. 75—5—125)	2	1,500	3,000			
Attendants (Rs. 25—2—55)	2	250	500	500 sq. ft.	Rs.3/- per sq. ft.	1,500
					Total ..	6,25,750

Only in the second five years.

Accommodation for the Dental Organisation attached to each 200-bed hospital.

Orthodental Surgeon (Rs. 375—25—750)	1	2,500	2,500			
Dentists (Rs. 250—25—500)	2	2,000	4,000	6,500 sq. ft.	Rs.5/- per sq. ft.	32,500
Dental hygienists (Rs. 80—15—130)	4	1,000	4,000		Rs.3/- per sq. ft	12,000
					Total	44,500
						only in the 2nd five years.

500-Bed Hospital.

Non-recurring

Building & equipment.—

Building	17,50,300
Equipment	2,50,000
	20,00,000

Accommodation for the staff of 500-bed hospital.

Personnel.	No.	Floor area for each sq.ft.	Total floor area sq. ft.		Rate of charge per sq. ft. (Rs.)	Total charge Rs.
Superintendent (Rs. 600—30—900)	1	2,500	2,500			
M. O. in charge (Rs. 400—30—700)	3	2,500	7,500			
House Staff (Rs. 250—25—500)	6	2,000	12,000	2,13,500 sq. ft.	Rs. 5 per sq. ft.	10,67,500
Assistant M. O. in charge of Laboratory (Rs. 250—25—500)	2	2,000	4,000			
Nurses	125	1,500	1,87,500			
Senior Pharmacist	1	625	625			
Laboratory Technicians	3	625	1,875			
Caretaker (animals)	1	500	500			
Laboratory attendants	3	250	750			
Pharmacists	16	500	8,000	33,750 sq. ft.	Rs. 3 per sq. ft.	1,01,250
Ward attendants	32	250	8,000			
Sweepers	32	250	8,000			
Cooks	16	250	4,000			
Malis	4	250	1,000			
Mistry	1	500	500			
Inferior servant	2	250	500			
Clerk (1st Division)	1	1,500	1,500			
Stenographer	1	1,500.	1,500	4,000 sq. ft.	Rs. 5 per sq. ft.	20,000
Clerk (2nd Division)	1	1,000	1,000			

Accommodation for the staff of 500-bed hospital—contd.

Personnel.	No.	Floor area for each sq. ft.	Total floor area sq. ft.	Rate of charge per sq. ft. (Rs.)	Total charge. Rs.
Senior M. O. (X-ray) (Rs. 400—30—700)	1	2,500	2,500		
Junior M. O. (X-ray) (Rs. 250—25—500)	2	2,000	4,000 } 15,500	Rs. 5 per sq. ft.	77,500
Technicians (Rs. 150—10—250)	2	1,500	3,000 } sq. ft.		
Nurses	4	1,500	6,000		
Attendants (Rs. 25—2—55)	4	250	1,000	Rs. 3 per sq. ft.	3,000
				Total ..	12,69,250 or Rs. 12,70,000

IN THE SECOND FIVE YEARS ONLY

Accommodation for the Dental organisation attached to a 500-bed hospital.

	No.	sq. ft.	Total sq. ft.	Rate per sq. ft.	Total cost (Rs.)
Officer-in-Charge of Dental Section (Rs 500-30-800)	1	2,500	2,500		
Orthodental Surgeon (Rs. 375—25—750) ..	1	2,500	2,500 } 11,000	Rs. 5 per sq. ft.	55,000
Dentists (Rs. 250—25—500)	3	2,000	6,000 } sq. ft.		
Dental Hygienists (Rs. 50—5—130).	5	1,000	5,000 5,000 sq. ft.	Rs. 3 per sq. ft.	15,000
				Total ..	70,000

RECURRING.

	First five years. Rs.	First ten years. Rs.
I. *Primary Unit.*		
(*a*) Staff salary	28,92,66,264	1,05,01,52,805
(*b*) Dispensary: drugs, and sundries	2,45,97,600	8,17,36,700
II. *30-bed hospital.*		
(*a*) Staff salary	2,95,80,980	16,53,97,469
(*b*) Drugs, sundries and diet	2,18,40,000	11,64,45,000
(*c*) Ambulance maintenance	1,09,20,000	5,82,22,500
III. *Secondary Unit.*		
Staff salary	8,34,67,152	22,72,96,865
IV. (*a*) Staff salary—		
200-bed hospital	22,01,44,392	49,11,82,593
500-bed hospital	..	16,18,43,754
(*b*) Drugs, sundries and diet		
200-bed hospital	10,80,00,000	21,60,00,000
500-bed hospital	..	8,72,50,000
V. *Administrative Organisation at the District headquarters.*	5,81,65,776	12,25,73,736
VI. *Preparation of House Lists*	28,00,000	60,00,000
Total ..	84,87,82,164	278,41,01,422
Maintenance charges on capital works in connection with three million unit scheme,		
Primary unit	2,44,77,900	9,49,88,525
30-bed hospital	43,94,730	2,41,16,707
Secondary unit	45,36,000	1,18,24,020
200-bed hospital	3,69,55,440	8,43,03,180
500-bed hospital	..	2,10,42,000
Total ..	7,03,64,070	23,62,74,432
Grand Total ..	91,91,46,234	302,03,75,854

RECURRING.

I. *Primary unit.*

(*a*) Staff salaries (see for further details pp.267-268)

	Rs.	Rs.
1st year	4,28,24,160	
2nd year	4,53,06,000	
3rd year	4,77,84,600	
4th year	6,51,72,352	
5th year	8,81,79,152	28,92,66,264
6th year	10,73,63,332	
7th year	12,86,81,062	
8th year	15,03,49,361	
9th year	17,45,74,156	
10th year	19,99,18,630	1,05,01,52,805

(*b*) *Dispensary.*

Recurring cost in respect of drugs, sundries and maintenance of emergency beds.

	Rs.	Rs.
Drugs	1,500	
Sundries	600	
Emergency beds	600	
Two Maternity beds at Rs. 500 per bed ..	1,000	
	3,700	
1st year 1060 × 3,700	39,96,000	
2nd year Do.	39,96,000	
3rd year Do.	39,96,000	
4th year 1456 × 3,700	53,87,200	
5th year 1952 × 3,700	72,22,400	2,45,97,600
6th year 2296 × 3,700	84,84,100	
7th year 2682 × 3,700	99,49,300	
8th year 3071 × 3,700	1,13,62,700	
9th year 3485 × 3,700	1,28,94,500	
10th year 3905 × 3,700	1,44,48,500	8,17,36,700

RECURRING.

II. *30-bed hospital.*

(*a*) *Staff salary.* (see for further details pp. 269-270).

	Rs.	Rs.
1st year	40,00,536	
2nd year	42,40,944	
3rd year	44,81,568	
4th year	82,04,140	
5th year	86,53,792	2,95,80 380
6th year	1,35,34,907	
7th year	1,94,73,328	
8th year	2,55,77,710	
9th year	3,37,78,409	
10th year	4,34,52,135	16,53,97,469

(*b*) *Drugs, sundries and diet.*

Drugs	4,500	
Sundries	1,500	
Diet	9,000	
	15,000	
1st year 216 × 15,000	32,40,000	
2nd year 216 × 15,000	32,40,000	
3rd year 216 × 15,000	32,40,000	
4th year 404 × 15,000	60,60,000	
5th year 404 × 15,000	60,60,000	2,18,40,000
6th year 639 × 15,000	95,85,000	
7th year 921 × 15,000	1,38,15,000	
8th year 1195 × 15,000	1,79,25,000	
9th year 1562 × 15,000	2,34,30,000	
10th year 1990 × 15,000	2,98,50,000	11,64,45,000

(*c*) *Ambulance maintenance.*

For 2 motors ..	6,000		
For 1 animal drawn	1,500	7,500 per year	
1st year 216 × 7,500			16,20,000
2nd year 216 × 7,500			16,20,000
3rd year 216 × 7,500			16,20,000
4th year 404 × 7,500			30,30,000
5th year 404 × 7,500			30,30,000 1,09,20,000
6th year 639 × 7,500			47,92,500
7th year 921 × 7,500			69,07,500
8th year 1195 × 7,500			89,62,500
9th year 1562 × 7,500			1,17,15,000
10th year 1990 × 7,500			1,49,25,000 5,82,22,500

III. *Secondary Unit.*

Staff salary (see for further details pp. 271-272).

1st year	1,51,96,896	
2nd year	1,59,33,456	
3rd year	1,66,95,504	
4th year	1,74,45,024	
5th year	1,81,96,272	8,34,67,152
6th year	2,13,06,024	
7th year	2,74,01,406	
8th year	2,88,69,750	
9th year	2,98,80,576	
10th year	3,63,71,857	22,72,98,865

RECURRING.

IV. (a) *200-bed hospital.*

Staff salary (see for further details pp. 274-276).

	Rs.	Rs.
1st year	3,91,88,960	
2nd year	4,16,09,376	
3rd year	4,40,26,632	
4th year	4,64,48,424	
5th year	4,88,70,000	22,01,44,392
6th year	5,55,71,400	
7th year	5,24,76,660	
8th year	5,45,20,314	
9th year	5,71,62,126	
10th year	5,13,07,701	49,11,82,598

500-bed hospital.

Staff salary (see for further details pp. 277-280).

7th year	2,83,45,482	
8th year	3,24,59,484	
9th year	3,40,54,044	
10th year	6,69,84,744	16,18,43,754

(b) *Drugs, Sundries and Diet.*

for the 200-bed hospital.

Drugs and sundries	40,000			
Diet ..	60,000	1,00,000		
1st year 216 × 1,00,000			2,16,00,000	
2nd year 216 × 1,00,000			2,16,00,000	
3rd year 216, × 1,00,000			2,16,00,000	
4th year 216, × 1,00,000			2,16,00,000	
5th year 216 × 1,00,000			2,16,00,000	10,80,00,000
6th year 216 × 1,00,000			2,16,00,000	
7th year 216 × 1,00,000			2,16,00,000	
8th year 216 × 1,00,000			2,16,00,000	
9th year 216 × 1,00,000			2,16,00,000	
10th year 216 × 1,00,000			2,16,00,000	21,60,00,000
For 500-bed hospital				
Drugs and sundries	1,00,000			
Diet ..	1,50,000	2,50,000		
7th year 66 × 2,50,000			1,65,00,000	
8th year 72 × 2,50,000			1,80,00,000	
9th year 72 × 2,50,000			1,80,00,000	
10th year 139 × 2,50,000			3,47,50,000	9,72,50,000

V. *Recurring cost in respect of the Administration organisation at the District Headquarters.*

(see for further details p. 281).

1st five years.

	Rs.
One such organisation	2,69,28
216 „ „	5,81,65,776
2nd five years.	
One such organisation	2,85,185
216 „ „	6,44,07,960
1st ten years.	
For 216 District Headquarters Organisation	12,25,78,736

VI. *Preparation of House lists* — (see for further details pp. 282-285).

1st five years .. .. Rs. 28 lakhs.

1st ten years .. .. Rs. 60 lakhs.

I(a)

SALARIES.—*Primary Unit Staff.*

Recurring—further details.

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Medical Officer (male) @ Rs. 250—25—500 ..	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Medical Officer (female) @ Rs. 250—25—500 ..	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Public Health Nurses @ Rs. 100—5—120—10—200	4	4,800	5,040	5,280	5,520	5,760	6,240	6,720	7,200	7,680	8,160
Midwives @ Rs. 50—5—100	4	2,400	2,640	2,800	3,120	3,360	3,600	3,840	4,080	4,320	4,560
Trained Dais @ Rs. 25—1½—40—2—50	4	1,200	1,272	1,344	1,416	1,488	1,560	1,632	1,704	1,776	1,848
Sanitary Inspectors @ Rs. 100—5—150	2	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Health Assistants (1 male, 1 female) @ Rs. 60–5–100	2	1,440	1,560	1,680	1,800	1,902	2,040	2,160	2,280	2,400	2,400
Pharmacist @ Rs. 40—2—60	1	480	504	528	552	576	600	624	648	672	696
Fitter Mistri @ Rs. 40—2—60	1	480	504	528	552	576	600	624	648	672	696
Clerks @ Rs. 75—5—150	2	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Inferior Servants—Jamadar @ Rs. 40—2—60 ..	1	480	504	528	552	576	600	624	648	672	696
Others @ Rs. 25—2—55	14	4,200	4,536	4,872	5,208	5,544	5,880	6,216	6,552	69,888	7,224
Nurse @ Rs. 75—5—125	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,400
Allowance for the above staff	..	3,000	3000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Contingencies { Maternity & Child Welfare 3,000; Sanitary Engineering 1,500; Other items 1,500 }	..	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Leave & Pensionary charges	..	144	151	163	173	182	216	227	238	248	259
		3,928	4,239	4,542	4,847	5,150	6,285	6,675	7,063	7,452	7,819
Total	..	39,652	41,950	44,245	46,540	48,832	52,221	54,842	57,461	60,080	62,558

I. *b. DISPENSARY.* Drugs, diets and sundries:

Drugs	1,500 a year
Sundries	600 ,,
Emergency beds	600 ,,
Two maternity beds @ Rs. 500 per bed ..	1,000
Total for one dispensary ..	**3,700**

Total expenses in respect of salaries of staff of all Primary Units during the first ten-year period.

Year.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
1st ..	(1,080×39,652) 4,28,24,160	(1,080×41,950) 4,53,06,000	(1,080×44,245) 4,77,84,600	(1,080×46,540) 5,02,63,200	(1,080×48,832) 5,27,38,560	(1,080×52,221) 5,63,98,680	(1,080×54,842) 5,92,29,360	(1,060×57,461) 6,20,57,880	(1,060×60,080) 6,48,86,400	(1,080×62,558) 6,75,62,640
2nd ..	..	..	..	..	..	..	..	..	..	..
3rd ..	..	..	..	..	..	..	..	..	..	..
4th ..	..	..	..	(376×39,652) 1,49,09,151	(376×41,950) 1,57,73,200	(376×44,245) 1,66,36,120	(376×46,540) 1,74,99,040	(376×48,832) 1,83,60,832	(376×52,221) 1,96,35,096	(376×54,842) 2,06,20,592
5th ..	..	..	..	..	(496×39,652) 1,96,67,392	(496×41,950) 2,08,07,200	(496×44,245) 2,19,45,520	(496×46,540) 2,30,83,840	(496×48,832) 2,42,20,672	(496×52,221) 2,59,01,616
6th ..	..	..	..	..	..	(341×39,652) 1,35,21,332	(341×41,950) 1,43,04,950	(341×44,245) 1,50,87,545	(341×46,540) 1,58,70,140	(341×48,832) 1,64,81,212
7th ..	..	..	..	..	..	..	(396×39,652) 1,57,02,192	(396×41,950) 1,66,12,200	(396×44,245) 1,75,21,020	(396×46,540) 1,84,29,840
8th ..	..	..	..	..	..	..	..	(382×39,652) 1,51,47,064	382(×41,950) 1,60,24,900	(382×44,245) 1,69,01,590
9th ..	..	..	..	..	..	..	..	..	(414×39,652) 1,64,15,928	(414×41,950) 1,73,67,300
10th ..	..	..	..	..	..	..	..	..	..	(420×39,652) 1,66-53,840
Total for the first ten years ..	4,28,24,160	4,53,06,000	4,77,84,600	6,51,72,352	8,81,79,152	10,72,63,332	12,86,81,062	15,03,49,361	17,45,74,156	19,99,18,630

Five years—Rs. 28,92,66,264 Ten years—Rs. 1,05,01,52,805

H (a).

30-Bed Hospital

Salary of Staff.

Recurring—further details.

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Medical Officer @ Rs. 250—25—500	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Staff Nurses @ Rs. 100—5—175	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Nurses @ Rs. 75—5—125	7	6,300	6,720	7,140	7,560	7,980	8,400	8,820	9,240	9,660	10,080
Health Assistant @ Rs. 60—5—100	1	720	780	840	900	960	1,020	1,080	1,140	1,200	1,260
Pharmacist @ Rs. 40—2—60	1	480	504	528	552	576	600	624	648	672	696
War Attendants @ Rs. 30—2—50	2	720	768	816	864	912	960	1,008	1,056	1,104	1,152
Cook @ Rs. 30—2—50 ..	1	360	384	408	432	456	480	504	528	552	576
Sweepers @ Rs. 25—1—35	2	600	624	648	672	696	720	744	768	792	816
Contingencies		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Leave salary & pension contributions		2,141	2,294	2,448	2,602	2,755	3,273	3,445	3,618	3,791	3,963
Total ..		18,521	19,634	20,748	21,862	22,975	24,453	25,585	26,718	27,851	28,983

H *b*.—Drugs, sundries and diet.—

Drugs	4,500	
Sundries	1,500	
Diet (at Rs. 300 per bed per year) ..	9,000	
Total ..	15,000	per year.

Total cost in respect of salaries of staff of all the 30-bed hospitals for the first ten years.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
	Rs. (216 × 18,521)	Rs. (216 × 19,634)	Rs. (216 × 20,748)	Rs. (216 × 21,862)	Rs. (216 × 22,975)	Rs. (216 × 24,453)	Rs. (216 × 25,585)	Rs. (216 × 26,718)	Rs. (216× 27,851)	Rs. (216× 28,983)
1st year ..	40,00,536	42,40,944	44,81,568	47,22,192	49,62,600	52,81,848	55,26,360	57,71,088	60,15,816	62,60,328
2nd year ..	..	..	..	..	..	..	..	..	..	..
3rd year ..	..	..	..	..	..	..	..	..	..	..
				(188 × 18,521	(188 × (19,634)	(188 × 20,748)	(188 × 21,862)	(188 × 22,975)	(188 × 24,453)	(188× 25,585)
4th year ..	..	..	..	34,81,948	36,91,192	39,00,624	41,10,056	43,19,300	45,97,164	48,09,980
5th year ..	..	..	..	..	..	..	..	..	..	..
Total for the first five years.	40,00,536	42,40,944	44,81,568	82,04,140	86,53,792	..	..	..	..	..
						(235 × 18,521)	(235 × 19,634)	(235 × 20,748)	(235 × 21,862)	(235 × 22,975)
6th year ..	..	..	..	..	..	43,52,435	46,13,990	48,75,780	51,37,570	53,99,125
							(282 × 18,521)	(282 × 19,634)	(282 × 20,748)	(282 × 21,862)
7th year ..	..	..	..	..	..	..	52,22,922	55,36,788	58,50,936	61,65,084
								(274 × 18,521)	(274 × 19,634)	(274 × 20,748)
8th year ..	..	..	..	..	..	..	..	50,74,754	53,79,716	56,84,952
									(367 × 18,521)	(367 × 19,634)
9th year ..	..	..	..	..	..	..	..	..	67,97,207	72,05,678
										(428 × 18,521
10th year ..	..	..	..	..	..	..	..	..	..	79,26,988
			Total for the second five years			1,35,34,907	1,94,73,328	2,55,77,710	3,37,78,409	4,34,52,135
Total for the 1st ten years.	**40,00,536**	**42,40,944**	**44,81,568**	**82,04,140**	**86,53,792**	**1,35,34,907**	**1,94,73,328**	**2,55,77,710**	**3,37,78,409**	**4,34,52,135**

Secondary Unit Staff.

(Recurring—further details).

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Administrative M. O. @ Rs. 1,000—50—1,200	1	12,000	12,600	13,200	13,800	14,400	14,400	14,400	14,400	14,400	14,400
Deputy A.M.O. @ Rs. 500—30—800	1	6,000	6,360	6,720	7,080	7,440	7,800	8,160	8,520	8,880	9,340
Assistant A. M O. (Maternity & C. W.) @ Rs. 400—30—700	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
Assistant Public Health Engineer @ Rs. 400—30—700	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
Senior Sanitary Inspectors @ Rs. 150—10—250 ..	2	3,600	3,840	4,080	4,320	4,560	4,800	5,050	5,280	5,520	5,760
Senior Public Health Nurses @ Rs. 150—10—250	2	3,600	3,840	4,080	4,320	4,560	4,800	5,040	5,280	5,520	5,760
Head clerk @ Rs. 200—10—300	1	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Statistical clerk @ Rs. 200—10—300	1	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Stenographers @ Rs. 100—5—200	3	3,600	3,780	3,960	4,140	4,320	4,500	4,680	4,860	5,040	5,220
Clerk (1st Division) @ Rs.150—10—250)	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Clerk (2nd Division) @ Rs.75—5—150 ..	2	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Inferior servants @ Rs. 25 —2—55	5	1,500	1,620	1,740	1,860	1,980	2,100	2,220	2,340	2,460	2,580
Allowances		8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400
Contingencies		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Pension & Leave salary eharges		10,656	11,126	11,714	12,244	12,782	13,752	14,217	14,681	15,144	15,631
Total ..	Rs.	70,356	73,766	77,294	80,764	84,242	87,552	90,357	93,161	95,964	98,891

Mobile Dental Organisation (One for each Secondary Centre in the Second five years).

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.
		Rs.	Rs	Rs.	Rs.	Rs.
Dentist @ Rs. 250—25—500	1	3,000	3,300	3,600	3,900	4,200
Dental Hygienists @ Rs. 80—5—130	2	1,920	2,040	2,160	2,280	2,400
Attendant @ Rs. 30—2—50	1	360	384	408	432	456
Pension & leave salary		1,007	1,092	1,176	1,260	1,345
Cost of drugs and dental materials		1,200	1,200	1,200	1,200	1,200
Maintenance, transportation and depreciation charges	3,600	3,600	3,600	3,600	3,600	3,600
Total ..		11,087	11,616	12,144	12,672	13,201

Salaries of staffs of all secondary units.

	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
1st to 6th year of the scheme.	(216 × 70,356) 1,51,96,896	(216 × 73,766) 1,59,33,456	(216 × 77,294) 1,66,95,504	(216 × 80,764) 1,74,45,024	(216 × 84,242) 1,81,96,272	(216 × 87,552) 1,89,11,232	(216× 90,357) 1,95,17,112	(216 × 93,161) 2,01,22,776	(216 × 95,964) 2,07,28,224	(216 × 98,891) 2,13,60,456
7th year ..	..	..	..	..	..	..	(66 × 70,356) 46,43,496	(66 × 73,766) 48,68,556	(66 × 77,294) 51,01,404	(66 × 80,764) 53,30,424
8th year ..	..	..	..	..	..	..	..	(6 × 70,356) 4,22,136	(6 × 73,766) 4,42,496	(6 × 77,294) 4,63,764
9th year ..	..	..	..	..	..	..	..	..	..	..
10th year ..	..	..	..	..	..	..	..	..	..	(67 × 70,356) 47,13,852
Total ..	1,51,96,896	1,59,33,456	1,66,95,504	1,74,45,024	1,81,96,272	1,89,11,232	2,41,60,608	2,54,13,468	2,62,72,224	3,18,68,496
Total recurring expenditure on Mobile Dental Organisations (from the accompanying sheets).				..	..	23,94,792	32,40,798	34,56,282	36,08,352	45,03,461
	1,51,96,896	1,59,33,456	1,66,95,504	1,74,45,024	1,81,96,272	2,13,06,024	2,74,01,406	2,88,69,750	2,98,80,576	3,63,71,957

1st five years — Rs. 8,34,87,152. Second five years — Rs. 14,38,29,713.

Expenditure of the Mobile Dental Organisations attached to secondary units (one to each secondary unit in the second five years only).

	6th year.	7th year.	8th year.	9th year.	10th year.
6th year	(216×11,087) 23,94,792	(216×11,616) 25,09,056	(216×12,144) 26,23,104	(216×12,672) 27,37,152	(216×13,201) 28,51,416
7th year	..	(66 × 11,087) 7,31,742	(66 × 11,616) 7,66,656	(66 × 12,144) 8,01,504	(66 × 12,672) 8,36,352
8th year	..	..	(6 × 11,087) 66,522	(6 × 11,616) 69,696	(6 × 12,144) 72,864
9th year	..	..	..	..	..
10th year	..	..	..	..	(67 × 11,087) 7,42,829
Total ..	23,04,792	32,40,798	34,56,282	36,08,352	45,03,461
				Grand Total ..	1,72,03,685

200-Bed Hospital

IV. (a). **Salary of Staff—*Further Details.***

	Number	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Superintendent. @ Rs. 500—30—800 ..	1	6,000	6,350	6,720	7,080	7,440	7,800	8,160	8,520	8,880	9,240
M.O's. in-Charge of Departments of Medicine, Surgery & Midwifery & Gynaecology. @ Rs. 400—30—700 ..	2	9,600	10,320	11,040	11,760	12,480	13,200	13,920	14,640	15,360	16,080
M.O. in-Charge of Laboratory @ Rs. 400—30—700 ..	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
House Staff. @ Rs. 250—25—500 ..	6	18,000	19,800	21,600	23,400	25,200	27,000	28,800	30,600	32,400	34,200
Assistant M.O. in-Charge of Laboratory. @ Rs. 250—25—500 ..	2	6,000	6,600	7,200	7,800	8,400	9,000	9,600	10,200	10,800	11,400
Part-time Doctors. @ Rs. 100 p.m. ..	3	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Matron. @ Rs. 200—10—300 ..	1	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Assistant Matron. @ Rs. 150—5—200 ..	1	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220	2,280	2,340
Sister Tutor. @ Rs. 140—5—190 ..	1	1,680	1,740	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220
Night Sister. @ Rs. 135—5—185 ..	1	1,620	1,680	1,740	1,800	1,860	1,920	1,980	2,040	2,100	2,160
Theatre Sisters. @ Rs. 125—5—175 ..	2	3,000	3,120	3,240	3,360	3,480	3,600	3,720	3,840	3,960	4,080
Ward Sisters. @ Rs. 115—5—165 ..	4	5,520	5,760	6,000	6,240	6,480	6,720	6,960	7,200	7,440	7,680
Staff Nurses. @ Rs. 100—5—175 ..	19	22,800	23,940	25,080	26,220	27,360	28,500	29,640	30,780	31,920	33,060
Staff Nurses. @ Rs. 75—5—125 ..	17	15,300	16,320	17,340	18,360	19,380	20,400	21,420	22,440	23,460	24,480

Night Staff Nurses.											
@ Rs. 75—5—125 ..	2	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
House Sister.											
@ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
House Keeper.											
@ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Senior Pharmacist.											
@ Rs. 60—3—90 ..	1	720	756	792	828	864	900	936	972	1,008	1,044
Laboratory Technicians.											
@ Rs. 60—5—100 ..	3	2,160	2,340	2,520	2,700	2,880	3,060	3,240	3,420	3,600	3,780
Caretaker.											
@ Rs. 40—2—60 ..	1	480	504	528	552	576	600	624	648	672	696
Laboratory attendants.											
@ Rs. 30—2—50 ..	3	1,080	1,152	1,224	1,296	1,368	1,440	1,512	1,584	1,656	1,728
Pharmacist.											
@ Rs. 40—2—60 ..	6	2,880	3,024	3,168	3,312	3,456	3,600	3,744	3,888	4,032	4,176
Ward attendants.											
@ Rs. 30—2—50 ..	16	5,760	6,144	6,528	6,912	7,296	7,680	8,064	8,448	8,832	9,216
Sweepers.											
@ Rs. 25—1—35 ..	16	4,800	4,992	5,184	5,376	5,568	5,760	5,952	6,144	6,336	6,528
Cooks.											
@ Rs. 30—2—50 ..	8	2,880	13,072	3,264	3,456	3,648	3,840	4,032	4,224	4,416	4,608
Mali.											
@ Rs. 25—1—35 ..	4	1,200	1,248	1,296	1,344	1,392	1,440	1,488	1,536	1,484	1,632
Mistrie.											
@ Rs. 40—2—60 ..	1	480	504	528	552	576	600	624	648	672	696
Clerk.											
@ Rs. 150—10—250 ..	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Stenographer.											
@ Rs. 100—5—200 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Clerk.											
@ Rs. 75—5—150 ..	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,440
Peons.											
@ Rs. 25—2—55 ..	2	600	648	696	744	792	840	888	936	984	1,203
Pension & leave salary Charges.		23,439	24,997	26,585	28,173	29,761	33,519	35,200	36,881	38,561	40,241
contingencies		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000

200-Bed Hospital—*contd.*

	Number	1st year Rs.	2nd year Rs.	3rd year Rs.	4th year Rs.	5th year Rs.	6th year Rs.	7th year Rs.	8th year Rs.	9th year Rs.	10th year Rs.
Allowances		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
X-ray staff.											
Senior M.O.(x-ray).											
@ Rs. 400—30—700 ..	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
Assistant M.O. (x ray).											
@ Rs. 250—25—500 ..	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Technician.											
@ Rs. 150—10—250 ..	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Nurses.											
@ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
@ Rs. 75—5—125 ..	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,440
Attendants		600	648	696	744	792	840	888	936	984	1,032
@ Rs. 25—2—55											
Pension & leave salary charges		2,436	2,647	2,818	3,010	3,201	3,511	3,708	3,905	4,103	4,300
Dental Service.											
Orthodental Surgeon.											
@ Rs. 375—25—750 ..	1	..	..	..	..	..	4,500	4,800	5,100	5,400	5,700
Dentists.											
@ Rs. 250—25—500 ..	2	..	..	..	..	..	6,000	6,600	7,200	7,800	8,400
Dental Hygienists.											
@ Rs.80—5—130 ..	4	..	..	..	..	..	3,840	4,080	4,320	560	4,800
Pension & leave salary Charges		..	..	..	..	..	3,185	3,473	3,772	4,072	4,371
Total Rs.		1,81,435	1,92,636	2,03,827	2,15,039	2,26,250	2,57,275	2,70,013	2,82,762	2,95,512	3,08,260

IV. (*b*).

(Recurring).

Drugs, Sundries & Diet.—

	Rs.
Drugs & sundries	40,000
Diets	60,000
Total ..	1,00,000 per 200-bed hospital.

500-Bed Hospital.

IV. (a) (Salary of Staff—Further Details)

Recurring).

	Number.	1st year Rs.	2nd year Rs.	3rd year Rs.	4th year Rs.	5th year Rs.	6th year Rs.	7th year Rs.	8th year Rs.	9th year Rs.	10th year Rs.
Superintendent.											
@ Rs. 600—30—900 ..	1	7,200	7,560	7,920	8,280	8,640	9,000	9,360	9,720	10,080	10,440
M.O's. in-Charge of Departments of Medicine, Surgery & Midwifery and Gynaecology.											
@ Rs. 400—30—700 ..	2	9,600	10,320	11,040	11,760	12,480	13,200	13,920	14,640	15,360	16,080
M.O. in-Charge of Laboratory.											
@ Rs. 400—30—700 ..	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
House Staff.											
@ Rs. 250—25—500 ..	6	18,000	19,800	21,600	23,400	25,200	27,000	28,800	30,600	32,400	34,200
Assistant M.O. in-Charge of Laboratory.											
@ Rs. 250—25—500 ..	2	6,000	6,600	7,200	78,000	8,400	9,000	9,600	10,200	10,800	11,400
Part-time Doctors.											
@ Rs. 100 p.m. ..	3	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Matron.											
@ Rs. 200—10—300 ..	1	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Assistant Matron.											
@ Rs. 150—5—200 ..	1	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220	2,280	2,340
Sister Tutor.											
@ Rs. 140—5—190 ..	1	1,680	1,740	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220
Night Sister.											
@ Rs. 135—5—185 ..	1	1,620	1,680	1,740	1,800	1,860	1,920	1,980	2,040	2,100	2,160
Theatre Sister.											
@ Rs. 125—5—175 ..	3	4,500	4,680	4,860	5,040	5,220	5,400	5,580	5,760	5,940	6,120
Night Staff Nurses.											
@ Rs. 100—5—175 ..	2	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Assistant Night Sister.											
@ Rs. 115—5—165 ..	1	1,380	1,440	1,500	1,560	1,620	1,680	1,740	1,800	1,860	1,920
Special Department Nurses.											
@ Rs. 100—5—175 ..	30	36,000	37,800	39,600	41,400	43,200	45,000	46,800	48,600	50,400	52,200

500-Bed Hospital—*contd.*

	Number.	1st year Rs.	2nd year Rs.	3rd year Rs.	4th year Rs.	5th year Rs.	6th year Rs.	7th year Rs.	8th year Rs.	9th year Rs.	10th year Rs.
Staff Nurses. @ Rs. 100—5—175 ..	41	49,200	51,660	54,120	56,580	59,040	61,500	63,960	66,420	68,880	71,340
Staff Nurses. @ Rs. 75—5—125 ..	42	37,800	40,320	42,840	45,360	47,880	50,400	52,920	55,440	57,960	60,480
House Sister. @ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
House Keeper. @ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Pharmacist. @ Rs. 60—3—90 ..	1	720	756	792	828	864	900	936	972	1,008	1,044
Laboratory Technicians. @ Rs. 60—5—100 ..	3	2,160	2,340	2,520	2,700	2,880	3,060	3,240	3,420	3,600	3,780
Caretaker. @ Rs. 40—2—60 ..	1	480	504	528	552	576	600	624	648	672	696
Laboratory attendants. @ Rs. 30—2—50 ..	3	1,080	1,152	1,224	1,296	1,368	1,440	1,512	1,584	1,656	1,728
Pharmacists. @ Rs. 40—2—60 ..	16	7,680	8,064	8,448	8,832	9,216	9,600	9,984	10,368	10,752	11,136
Ward attendants. @ Rs. 30—2—50 ..	32	11,520	12,288	13,056	13,824	14,592	15,360	16,128	16,896	17,664	18,432
Sweepers. @ Rs. 25—1—35 ..	32	9,600	9,984	10,368	10,752	11,136	11,520	11,904	12,288	12,672	13,056
Cooks. @ Rs. 30—2—50 ..	16	5,760	6,144	6,528	6,912	7,296	7,680	8,064	8,448	8,832	9,216
Mali. @ Rs. 25—1—35 ..	4	1,200	1,248	1,296	1,344	1,392	1,440	1,488	1,536	1,584	1,632
Mistrie. @ Rs. 40—2—60 ..	1	480	504	528	552	576	600	624	648	672	696
Clerk. @ Rs. 150—10—250 ..	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Stenographer. @ Rs. 100—5—200 ..	1	1,200	1,260	1,920	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Clerk. @ Rs. 75—5—150 ..	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,440
Inferior Servants. @ Rs. 25—2—55 ..	2	600	648	696	744	792	840	888	936	984	1,032

Pension & leave charges ..		39,760	42,235	44,704	47,173	49,642	56,853	59,525	62,198	64,869	67,542
Contingencies.		6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,500
Allowances		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Staff of the X-ray Department.											
Senior M.O. (x-ray).											
@ Rs. 400—30—700 ..	1	4,800	5,160	5,520	5,880	6,240	6,600	6,960	7,320	7,680	8,040
Assistant M.O. (x-ray).											
@ Rs. 250—25—500 ..	2	6,000	6,600	7,200	7,800	8,400	9,000	9,600	10,200	10,800	11,400
Technicians (x-ray).											
@ Rs. 150—10—250 ..	2	3,600	3,840	4,080	4,320	4,560	4,800	5,040	5,280	5,520	5,760
Nurses.											
@ Rs. 100—5—150 ..	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
@ Rs. 75—5—125 ..	3	2,700	2,880	3,060	3,240	3,420	3,600	3,780	3,960	4,140	4,320
Attendants.											
@ Rs. 25—2—55 ..	4	1,200	1,296	1,392	1,488	1,584	1,680	1,776	1,872	1,968	2,064
Pension & leave salary charges		3,768	4,071	4,374	4,678	4,982	5,516	5,831	6,146	6,461	6,776
Dental Organisation.											
Officer-in-Charge of Dental Section.											
@ Rs. 500—30—800 ..	1	6,000	6,360	6,720	7,080	7,440	..	..	..	..	..
Orthodental surgeon.											
@ Rs. 375—25—750 ..	1	4,500	4,800	5,100	5,400	5,700	..	..	..	..	..
Dentists.											
@ Rs. 250—25—500 ..	3	9,000	9,900	10,800	11,700	12,600	..	..	..	..	..
Dental Hygienists.											
@ Rs. 80—5—130 ..	5	4,800	5,100	5,400	5,700	6,000	..	..	..	..	..
Pension & leave salary charges		7,011	7,428	7,857	8,286	8,715	..	..	..	..	..
Total ..		3,40,899	3,61,482	3,82,071	4,02,661	4,23,251	4,06,069	4,24,584	4,44,100	4,61,614	4,80,130

IV (b) (Recurring)											
Drugs, Sundries & Diet	Drugs & sundries					Rs. 1,00,000					
	Diets					1,50,000					
	Total ..					2,50,000	per 500-bed hospital.				

Salary of Staffs of 200-Bed Hospitals.

	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
First year ..	(216×1,81,435)	(216×1,92,636)	(216×2,03,827)	(216×215,039)	(216×2,26,250)	(216×2,37,275)	(150×2,70,013)	(144×2,82,762)	(144×2,95,512)	(77×3,08,260)
	3,91,89,960	4,16,09,376	4,40,26,632	4,64,48,424	4,88,70,000	5,55,71,400	4,05,01,950	4,07,17,728	4,25,53,728	2,37,36,020
Second year to Sixth year	*Nil.*									
Seventh year	..	..	..	..	..	..	(66×1,81,435)	(66×1,92,636)	(66×2,03,827)	(66×2,15,039)
							1,19,74,710	1,27,13,976	1,34,52,582	1,41,92,574
Eighth year..	..	..	..	..	..	..	..	(6×1,81,435)	(6×1,92,636)	(6×2,03,827)
								10,88,610	11,55,816	12,22,962
Ninth year ..	..	..	..	..	..	..	..	..	..	..
Tenth year ..	..	..	..	..	..	..	..	..	..	(67×1,81,435)
										1,21,56,145
	3,91,89,960	4,16,09,376	4,40,26,632	4,64,48,424	4,88,70,000	5,55,71,400	5,24,76,660	5,45,20,314	5,71,62,126	5,13,07,701

1st five years .. Rs. 22,01,44,392. Second five years .. Rs. 27,10,38,201.
1st ten years .. Rs. 49,11,82,593.

Salary of Staff of 500-Bed Hospitals.

	Sixth year.	Seventh year.	8th year.	9th year.	10th year.
Seventh year	..	(66 × 2,70,013)	(66 × 2,82,762)	(66 × 2,95,512)	(66 × 3,08,260)
		+	+	+	+
		66 (3,40,899—1,81,435)	66(3,61,482—1,92,636)	66 (3,82,071—2,03,827)	66 (4,02,661—2,15,039)
		2,83,45,482	2,98,06,128	3,12,67,896	3,27,28,212
Eighth year	..	..	(6 × 2,82,762)	(6 × 2,95,512)	(6 × 2,08,260)
			+	+	+
			6 (3,40,899—1,81,435)	6 (3,61,482—1,92,636)	6 (3,82,071—2,03,827)
			26,53,356	27,86,148	29,19,024
Ninth year	..	..	..	..	..
Tenth year	..	..	..	..	(67 × 3,08,260)
					+
					67 (3,40,899—1,81,435)
					3,13,37,508
Total Rs.		2,83,45,482	3,24,59,484	3,40,54,044	6,69,84,744

Grand Total .. Rs. 16,18,43,754

V.

The Administrative organisation at the district headquarters.

(Further details)

	Number	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Officer-in-Charge of District Health Services @ Rs. 1,250—50—1,500 ..	1	15,000	15,600	16,200	16,800	17,400	18,000	18,000	18,000	18,000	18,000
Deputy (for the area outside the Scheme) @ Rs. 1,000—50—1,200	1	12,000	12,600	13,200	13,800	14,400	14,400	14,400	14,400	14,400	14,400
Senior clerk, @ Rs. 150—10—250 ..	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Second clerk, @ Rs. 75—5—150 ..	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,440
Statistical clerk @ Rs. 200—10—300	1	2,400	2,500	2,640	2,660	2,880	3,000	3,120	3,240	3,360	3,488
Inferior servants @ Rs. 25—2—55 ..	3	800	972	1,044	1,116	1,188	1,260	1,332	1,404	1,476	1,548
Contingencies		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Travelling allowances		6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Pension & leave salary		9,234	9,474	9,713	9,953	10,192	10,499	10,566	10,633	10,700	10,767
Total		50,234	52,046	53,857	55,669	57,480	58,759	59,198	59,637	60,076	60,515

Recurring Cost in respect of the District Headquarters organisation.

	Rs.
1st five years.—	
One such organisat on	2,69,286
216 such organisations	5,81,65,776
2nd five years.—	
One such organisation	2,98,185
216 such organisations	6,44,07,960
1st ten years—	
For 216 District headquarters organisations	12,25,73,736

VI. *Preparation of House lists— (Further details).*

Five clerks (one for each primary unit) and one supervisor are provided for the first five primary units that will be set up in each district.

Pay—	Rs.
Supervisor	75 p.m.
Travelling allowance	25 p.m.
Total ..	100 p.m.
Clerk	60 p.m.
Travelling allowance	20 p.m.
Contingencies	5 p.m. (to cover all)
Total ..	85 p.m.

Province—	Total Cost. Ten year period. Rs.	Five year period. Rs.
1. Madras	8,91,360	3,31,200
2. Bombay	4,73,100	2,62,200
3. Bengal	10,45,200	3,58,800
4. U. P.	11, 95,200	6,62,400
5. Bihar	6,26,880	2,20,800
6. Orissa	1,49,400	82,800
7. Punjab	7,16,400	3,83,400
8. C. P. & Berar	3,92,160	2,23,440
9. Assam	2,43,600	88,200
10. Sind	1,03,680	50,400
11. N.-W. F. P.	64,440	37,800
	59,01,420	27,01,440
Or roughly about	Rs. 60 lakhs.	Rs. 28 lakhs.

Year.	Each District: No. of primary units.	Additional primary units each year.	No. of clerks	No. of supervisors.	Total No. of clerks	Total No. of supervisors	Expenditure: Clerks Rs. (85+12+120)	Supervisors Rs. (100×12×24)	Total cost
MADRAS.									
1st year	5	5	5	1	120	24	1,22,400	28,800	1,51,200
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	48	24	48,960	28,800	77,760
5th year	10	3	3	1	72	24	73,440	28,800	1,02,240
6th year	13	3	3	1	72	24	73,440	28,800	1,02,240
7th year	16	3	3	1	72	24	73,440	28,800	1,02,240
8th year	19	3	3	1	72	24	73,440	28,800	1,02,240
9th year	23	4	4	1	96	24	97,920	28,800	1,26,720
10th year	27	4	4	1	96	24	97,920	28,800	1,26,720
									8,91,360

Year.	Each District: No. of primary units.	Additional primary units each year.	No. of clerks.	No. of supervisors.	Total No. of clerks.	Total No. of supervisors.	Expenditure: Clerks Rs. 85+12+12))	Supervisors Rs. (100×12×24)	Total cost Rs.
BOMBAY.									
1st year	5	5	5	1	95	19	96,900	22,800	1,19,700
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	38	19	38,760	22,800	61,560
5th year	10	3	3	1	57	19	58,140	22,800	80,940
6th year	11	1	1	1	19	19	19,380	22,800	42,180
7th year	12	1	1	1	19	19	19,380	22,800	42,180
8th year	13	1	1	1	19	19	19,380	22,800	42,180
9th year	14	1	1	1	19	19	19,380	22,800	42,180
10th year	15	1	1	1	19	19	19,380	22,800	42,180
						Grand Total	..		4,73,100
BENGAL (26 Districts).									
1st year	5	5	5	1	130	26	1,32,600	31,200	1,63,800
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	52	26	53,040	31,200	84,240
5th year	10	3	3	1	78	26	79,560	31,200	1,10,760
6th year	14	4	4	1	104	26	1,06,080	31,200	1,37,280
7th year	18	4	4	1	104	26	1,06,080	31,200	1,37,280
8th year	22	4	4	1	104	26	1,06,080	31,200	1,37,280
9th year	26	4	4	1	104	26	1,06,080	31,200	1,37,280
10th year	30	4	4	1	104	26	1,06,080	31,200	1,37,280
						Grand Total	..		10,45,200
UNITED PROVINCES (48 Districts).									
1st year	5	5	5	1	240	48	2,44,800	57,600	3,02,400
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	96	48	97,920	57,600	1,55,520
5th year	10	3	3	1	144	48	1,46,880	57,600	2,04,480
6th year	11	1	1	1	48	48	48,960	57,600	1,06,560
7th year	12	1	1	1	48	48	48,960	57,600	1,06,560
8th year	13	1	1	1	48	48	48,960	57,600	1,06,560
9th year	14	1	1	1	48	48	48,960	57,600	1,06,560
10th year	15	1	1	1	48	48	48,960	57,600	1,06,560
						Gand Total	..		11,95,200
BIHAR (16 Districts).									
1st year	5	5	5	1	80	16	81,600	19,200	1,00,800
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	32	16	32,640	19,200	51,840
5th year	10	3	3	..	48	16	48,960	19,200	68,160
6th year	13	3	3	1	48	16	48,960	19,200	68,160
7th year	17	4	4	1	64	16	65,280	19,200	84,480
8th year	21	4	4	1	64	16	65,280	19,200	84,480
9th year	25	4	4	1	64	16	65,280	19,200	84,480
10th year	29	4	4	1	64	16	65,280	19,200	84,480
						Grand Total	..		6,26,880

Year.	Each District					Expenditure.		
	No. of primary units.	Additional primary units each year.	No. of clerks.	No. of supervisors.	Total No. of clerks.	Total No. of supervisors.	Clerks (Rs. 85+12+120).	Supervisors (Rs. 100×12×24).	Total each.
ORISSA (6 Districts).									
1st year	5	5	5	1	30	6	30,600	7,200	37,800
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	12	6	12,240	7,200	19,440
5th year	10	3	3	1	18	6	18,360	7,200	25,560
6th year	11	1	1	1	6	6	6,120	7,200	13,320
7th year	13	2	2	1	12	6	6,120	7,200	13,320
8th year	15	2	2	1	12	6	6,120	7,200	13,320
9th year	17	2	2	1	12	6	6,120	7,200	13,320
10th year	19	2	2	1	12	6	6,120	7,200	13,320
							Grand Total	..	1,49,400
PUNJAB (30 Districts).									
1st year	5	5	5	1	150	30	1,53,000	36,000	1,89,000
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	60	30	61,200	36,000	97,200
5th year	9	2	2	1	60	30	61,200	36,000	97,200
6th year	10	1	1	1	30	33	30,600	36,000	66,600
7th year	11	1	1	1	30	30	30,600	36,000	66,600
8th year	12	1	1	1	30	30	30,600	36,000	66,600
9th year	13	1	1	1	30	30	30,600	36,000	66,600
10th year	14	1	1	1	30	30	30,600	36,000	66 600
							Grand Total	..	7,16,400
C. P. & BERAR (19 Districts).									
1st year	5	5	5	1	95	19	96,900	22,800	1,19,700
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	7	2	2	1	38	19	38,760	22,800	61,560
5th year	8	1	1	1	19	19	19,380	22,800	42,180
6th year	8	..	..	..	..	..	..	..	..
7th year	9	1	1	1	19	19	19,380	22,800	42,180
8th year	10	1	1	1	19	19	19,380	22,800	42,180
9th year	11	1	1	1	19	19	19,380	22,800	42,180
10th year	12	1	1	1	19	19	19,380	22,800	42,180
							Grand Total	..	3,92,160
ASSAM (14 Districts).									
1st year	5	5	5	1	70	14	71,400	16,800	88.200
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	5	..	..	..	..	..	..	..	..
5th year	5	..	..	..	..	..	..	..	..
6th year	6	1	1	1	14	14	14,280	16,800	31,080
7th year	7	1	1	1	14	14	14,280	16,800	31,080
8th year	8	1	1	1	14	14	14,280	16,800	31,080
9th year	9	1	1	1	14	14	14,280	16,800	31,080
10th year	10	1	1	1	14	14	14,280	16,800	31,080
							Grand Total	..	2,43,600

	Each District						Expenditure.		
	No. of primary units.	Additional primary unit each year.	No. of clerks.	No. of supervisors.	Total No. of clerks.	Total No. of supervisors.	Clerks (Rs. 85+12+120)	Supervisors (Rs. 100×12×24)	Total cost.
SIND (8 Districts).									
1st year	5	5	5	1	40	8	40,800	9,600	50,400
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	5	..	..	..	..	..	..	..	..
5th year	5	..	..	..	..	..	..	..	..
6th year	5	..	..	..	..	..	..	..	..
7th year	6	1	1	1	8	8	8,160	9,600	17,760
8th year	6	..	..	..	..	..	..	..	..
9th year	7	1	1	1	8	8	8,160	9,600	17,760
10th year	8	1	1	1	8	8	8,160	9,600	17,760
						Grand Total		..	1,03,680
NORTH-WESTERN FRONTIER PROVINCE (6 Districts).									
1st year	5	5	5	1	30	6	30,600	7,200	37,800
2nd year	5	..	..	..	..	..	..	..	..
3rd year	5	..	..	..	..	..	..	..	..
4th year	5	..	..	..	..	..	..	..	..
5th year	5	..	..	..	..	..	..	..	..
6th year	5	..	..	..	..	..	..	..	..
7th year	6	1	1	1	6	6	6,120	7,200	13,320
8th year	6	..	..	..	..	..	..	..	..
9th year	6	..	..	..	..	..	..	..	..
10th year	7	1	1	1	6	6	6,120	7,200	13,320
						Grand Total		..	64,440

Maintenance charges on capital works in connection with the three-million unit scheme.

Year.	Capital expenditure	Maintenance at 3 per cent. per year.	
		1st five years.	1st ten years.
	Rs.	Rs.	Rs.
Primary Units.			
1st year	18,76,50,000	2,25,18,000	5,06,65,500
2nd year	..	..	..
3rd year	..	..	..
4th year	6,53,30,000	19,59,900	1,17,59,400
5th year	8,61,80,000	..	1,29,27,000
6th year	5,92,48,750	2,44,77,900	71,09,850
7th year	6,88,05,000		61,92,450
8th year	6,63,72,500		39,82,350
9th year	7,19,32,500		23,51,975
10th year	7,29,75,000		..
Total ..	..	..	9,49,88,525
30-bed hospital.			
1st year	3,00,78,000	36,09,360	81,21,060
2nd year	..	..	..
3rd year	..	..	..
4th year	2,61,79,000	7,85,370	47,12,220
5th year	..	..	..
6th year	3,27,23,750	43,94,730	39,26,850
7th year	3,92,68,500		35, 34,165
8th year	3,81,54,500		22, 89,270
9th year	5,11,04,750		15, 33,142
10th year	5,95,99,000		..
Total ..	..	..	2,41,16,707
Secondary Unit.			
1st year	3,78,00,000	45,36,000	1,02,06,000
2nd year	..	..	..
3rd year	..	..	..
4th year	..	..	..
5 th year	..	..	..
6th year	34,56,000	45,36,000	4,14,720
7th year	1,15,50,000+ 10,56,000 =1,26,06,000		11,34,540
8th year	10,50,000+ 96,000 =11,46,000		68,760
9th year	..	..	..
10th year	1,17,25,000+ 10,72,000 =1,27,97,000		..
Total ..	..	..	1,18,24,020

Maintenance charges on non-recurring expenditure.

Year.	Capital expenditure.	Maintenance at 3 per cent. per years.	
		1st five years.	1st ten years.
200-bed hospital.			
1st year	30,79,62,000	3,69,55,440	8,31,49,740
2nd year	..	..	..
3rd year	..	..	..
4th year	..	..	..
5th year	..	..	..
6th year	96,12,000	3,69,55,440	11,53,440
7th year	..		..
8th year	..		..
9th year	..		..
10th year	..		..
Total ..	..	..	8,43,03,180
500-Bed hospital.			
1st year	..		..
2nd year	..		..
3rd year	..		..
4th year	..		..
5th year	..		..
6th year	..		..
7th year	21,58,20,000+ 46,20,000 =22,04,40,000		1,98,39,600
8th year	1,96,20,000+ 4,20,000 =2,00,40,000		12,02,400
9th year	*Nil*		..
10th year	21,90,90,000+ 46,90,000 =22,37,80,000		
Total ..	..	..	2,10,42,000
		For the second five or 1st ten years.	

Number of primary units (and dispensaries having two maternity and two emergency beds) in British India, during the first ten years shown province-wise.

	Madras.	Bombay.	Bengal.	U. P.	Bihar.	Orissa.	Punjab.	C. P. & Berar.	Assam.	N. W. F. P.	Sind.	Total eleven Provinces.	Increase from year to year.
No. of districts.	24	19	26	48	16	6	30	19	14	8	6	216	
1st year ..	120	95	130	240	80	30	150	95	70	40	30	1,080	1,080
2nd „ ..	120	95	130	240	80	30	150	95	70	40	30	1,080	..
3rd „ ..	120	95	130	240	80	30	150	95	70	40	30	1,080	..
4th „ ..	168	133	182	336	112	42	210	133	70	40	30	1,456	376
5th „ ..	240	190	260	480	160	60	270	152	70	40	30	1,952	496
6th „ ..	312	209	364	528	208	66	300	152	84	40	30	2,293	341
7th „ ..	384	228	468	576	272	78	330	171	98	48	36	2,689	396
8th „ ..	456	247	572	624	336	90	360	190	112	48	36	3,071	382
9th „ ..	552	266	676	672	400	102	390	209	126	56	36	3,485	414
10th „ ..	648	285	780	720	464	114	420	228	140	64	42	3,905	420

Numbers of 30-bed hospitals during the first ten years in British India.

(Provision in respect of these hospitals has been doubled during the second five years).

	Madras.	Bombay.	Bengal.	U. P.	Bihar.	Orissa.	Punjab.	C. P. & Berar.	Assam.	N. W. F. P.	Sind.	Total eleven Provinces.	Increase from year to year.
No. of Districts.	24	19	26	48	16	6	30	19	14	8	6	216	
1st year	24	19	26	48	16	6	30	19	14	8	6	216	216
2nd „ ..	24	19	26	48	16	6	30	19	14	8	6	216	—
3rd „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
4th „ ..	48	38	52	96	32	12	60	38	14	8	6	404	188
5th „ ..	48	38	52	96	32	12	60	38	14	8	6	404	..
6th „ ..	96	57	104	144	64	18	90	38	14	8	6	639	235
7th „ ..	144	76	156	192	96	24	120	57	28	16	12	921	282
8th „ ..	192	95	208	240	128	36	150	76	42	16	12	1,195	274
9th „ ..	264	133	286	288	176	48	180	95	56	24	12	1,562	367
10th „ ..	336	152	390	384	224	60	210	114	70	32	18	1,990	428

Number of secondary units in British India, during the first ten years period.

	Madras.	Bombay.	Bengal.	U. P.	Bihar.	Orissa.	Punjab.	C. P. & Berar.	Assam.	Sind.	N. W. F. P.	Total 11 Provinces.	Increase from year to year.
No. of Districts.	24	19	26	48	16	6	30	19	14	8	6	216	
1st year	24	19	26	48	16	6	30	19	14	8	6	216	216
2nd „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
3rd „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
4th „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
5th „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
6th „ ..	24	19	26	48	16	6	30	19	14	8	6	216	..
7th „ ..	48	19	52	48	32	6	30	19	14	8	6	282	66
8th „ ..	48	19	52	48	32	12	30	19	14	8	6	288	6
9th „ ..	48	19	52	48	32	12	30	19	14	8	6	288	..
10th „ ..	48	38	52	96	32	12	30	19	14	8	6	356	68

Number of 200-bed and 500-bed hospitals in British India, during the First Ten years.

No. of Districts.	Madras 24		Bombay 19		Bengal 26		U. P. 48		Bihar 16		Orissa 6		Punjab 30		C. P. & Berar 19		Assam 14		Sind 8		N. W. F. P. 16		Total 216	
Year.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500-bed hospital.	200-bed hospital.	500 bed hospital.
1st year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
2nd year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
3rd year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
4th year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
5th year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
6th year ..	24	..	19	..	26	..	48	..	16	..	6	..	30	..	19	..	14	..	8	..	6	..	216	..
7th year ..	24	24	19	..	26	26	48	..	16	16	6	..	30	..	19	..	14	..	8	..	6	..	216	66
8th year ..	24	24	19	..	26	26	48	..	16	16	6	3	30	..	19	..	14	..	8	..	6	..	216	72
9th year ..	24	24	19	..	26	26	48	..	16	16	6	6	30	..	19	..	14	..	8	..	6	..	216	72
10th year ..	24	24	19	19	26	26	48	48	16	16	6	6	30	..	19	..	14	..	8	..	6	..	216	130

Housing of the staff.

		Rs.	Rs.	Rs.
I.—Primary Units—				
1st year	.. ..	1,080×1,38,750 =	14,98,50,000	..
2nd ,,	.. ..	..	..	..
3rd ,,	.. ..	..	..	..
4th ,,	.. ..	376×1,38,750 =	5,21,70,000	..
5th ,,	.. ..	496×1,38,750 =	6,88,20,000	27,08,40,000
6th ,,	.. ..	341×1,38,750 =	4,73,13,750	..
7th ,,	.. ..	396×1,38,750 =	5,49,45,000	..
8th ,,	.. ..	382×1,38,750 =	5,30,02,500	..
9th ,,	.. ..	414×1,38,750 =	5,74,42,500	..
10th ,,	.. ..	420×1,38,750 =	5,82,75,000	54,18,18,750
II.—30-bed hospitals—				
1st year	.. ..	216×84,250 =	1,81,98,000	
2nd ,,	.. ..	..	..	..
3rd ,,	.. ..	..	..	..
4th ,,	.. ..	188×84,250 =	1,58,39,000	..
5th ,,	.. ..	..	..	3,40,37,000
6th ,,	.. ..	235×84,250	1,97,98,750	..
7th ,,	.. ..	282×84,250 =	2,37,58,500	..
8th ,,	.. ..	274×84,250 =	2,30,84,500	
9th ,,	.. ..	367×84,250 =	3,09,19,750	..
10th ,,	.. ..	428×84,250 =	3,60,59,000	16,76,57,500
Secondary Units—				
1st year	.. ..	216×1,45,000 =	3,13,20,000	..
2nd to 5th year	..	..	..	3,13,20,000
6th year (Dental)	..	216×16,000 =	34,56,000	..
7th ,,	.. ..	66×(1,45,000+16,000)=	1,06,26,000	..
8th ,,	.. ..	6×1,61,000 =	966,000	..
9th ,,	.. ..	..	..	..
10th ,,	.. ..	67×1,61,000 =	1,07,87,000	5,71,55,000
660-bed Hospital (inclusive of Dental)		216×(6,25,750+44,500)=	14,47,74,00	
			1st five and ten years.	
660-bed Hospitals (inclusive of Dental)				
7th year	..	66×12,70,000 =	8,84,40,400	
8th ,,	..	6×13,40,000	80,40,300	
9th ,,	..		..	1st ten years
10th ,,	..	67×13,40,000 =	8,97,80,000	18,62,60,000

Total cost of accommodation for all

1st five years	*2nd five years*	*1st ten years.*
Rs.	Rs.	Rs.
48,09,71,000	61,66,94,250	109,76,65,250

Preliminary Surveys.

Before starting the proposed health developments it is desirable to have a survey to find out existing health conditions. If such a survey can be carried out in every district where the scheme is to be introduced we shall have reached the ideal arrangement. However, particularly in view of the trained staff necessary this may not be possible. It is therefore suggested that such surveys should be carried out in the areas under our scheme in four districts in each province, which are selected as being representative of the conditions prevailing in the province as a whole. In Singur, for a population of about 62,100, it is understood that the survey cost Rs. 16,000. Therefore the survey in each district will cost roughly Rs. 50,000 and in each province Rs. *two lakhs*. For eleven Provinces this cost will be Rs. *22 lakhs*.

It is desirable that health surveys should be accompanied by similar surveys in other fields such as agriculture, animal husbandry, education, etc.

Non-recurring.

Water Supply

1st five years—

	Rs.	
Urban	10,00,00,000	Maintenance at 3% per year Rs. 1,20,00,000.
Rural	10,00,00,000	

2nd five years—

Urban ..	10.00.00,000	On previous periods expenditure 3,00,00,000.
Rural	10,00,00,000	On 2nd five years' expenditure Rs. 1,20,00,000.

Ten years—

Urban	20,00,00,000	Maintenance total Rs. 5,40,00,000.
Rural	20,00,00,000	

Drainage—

1st five years	30,00,00,000	Maintenance 1st five years ..	1,80,00,000
1st ten years	60,00,00,000	1st ten years	8,10,00,000

Total maintenance on water supply and drainage together :

	Rs.
1st five years	1,20,00,000
	1,80,00,000
	3,00,00,000
1st ten years	5,40,00,000
	8,10,00,000
	13,50,00,000

Recurring.

	Rs.
1st five years—	
Water and Drainage Board, Investigation units @ Rs. 2·6 lakhs per year	13,00,000
2nd five years—	
Water and Drainage Board, Investigation units @ Rs. 2·6 lakhs per year	13,00,000
1st ten years—	
Rs. 13,00,000 plus Rs. 13,00,000	26,00,000

General Directorate—

	1st five years. Rs.	*1st ten years.* Rs.
Officers	37,00,000	82,50,000
Establishment	8,00,000	18,00,000
Travelling allowances	6,25,000	12,50,000
Total ..	51,25,000	1,13,00,000

Provincial Directorate—

	1st five years. Rs.	*1st ten years.* Rs.
Officers	2,93,81,550	5,89,28,100
Establishment	44,00,000	94,60,000
Travelling allowance	46,75,000	93,50,000
Total ..	3,84,56,050	7,77,38,100

CENTRAL DIRECTORATE.

Name.	No.	Scale of pay.
STAFF—		
Director General of Health Services	1	Rs. 3,500 per mensem.
Deputy Directors	6	Rs. 2,750 per mensem.
Assistant Directors	14	Rs. 1,900—50—2,100.

PROVINCIAL DIRECTORATE.

Name.	No.	Scale of pay.
STAFF—		
Director of Health Services	1	Rs. 2,750 per mensem.
Deputy Directors	5	Rs. 2,000—50—2,500.
Assistant Directors	14	Rs. 1,500—50—1,750.

CENTRAL DIRECTORATE
(Further details)

	Number	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Director General of Health Services @ Rs. 3,500/- p.m.	1	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000
Deputy Directors @ Rs. 2,750/- p.m.	6	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000	1,98,000
Assistant Directors @ Rs. 1,900—50—2,100	14	3,19,200	3,27,600	3,36,000	3,44,400	3,52,800	3,52,800	3,52,800	3,52,800	3,52,800	3,52,800
Pension & Leave Charges —											
Pension @ Rs. 176 p.m. per officer		44,352	44,352	44,352	44,352	44,352	4,4352	4,4352	44,352	44,352	44,352
Leave salary @ 15% ..		88,880	85,140	86,400	87,660	88,920	88,920	88,920	88,920	88,920	88,920
		6,87,432	6,97,092	7,06,752	7,16,412	7,26,072	7,26,072	7,26,072	7,26,072	7,26,072	7,26,072
		Roughly Rs. 37,00,000					Roughly Rs. 45,50,000				
tablishment.		1,60,000	1,60,000	1,60,000	1,60,000	1,60,000	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000
Total ..		8,47,432	8,57,092	8,66,762	8,76,412	8,86,072	9,48,572	9,48,572	9,48,572	9,48,572	9,48,572
		or roughly 9,00,000	9,00,000	9,00,000	9,00,000	9,00,000	9,50,000	9,50,000	9,50,000	9,50,000	9,50,000
		1st five years total—45,00,000					2nd five years total—47,50,000				
Travelling allowances. —		1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000
		1st five years total—6,25,000					2nd five years total.—6,25,000.				

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Provincial Directorate

(Further details)

	Number.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Director of Health Services @ Rs. 2,750	1	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000
Deputy Directors @ Rs. 2,000—50—2,500 ..	5	1,20,000	1,23,000	1,26,000	1,29,000	1,32,000	1,35,000	1,38,000	1,41,000	1,44,000	1,47,000
Assistant Directors @ Rs. 1,500—50—1,750 ..	14	2,52,000	2,60,400	2,68,800	2,77,200	2,85,600	2,94,000	2,94,000	2,94,000	2,94,000	2,94,000
Pension		42,240	42,240	42,240	42,240	42,240	42,240	42,240	42,240	42,240	42,240
Leave salary		60,750	62,460	64,170	65,880	67,590	69,300	69,750	70,200	70,650	71,100
Totals ..		5,07,990	5,21,100	5,34,210	5,47,320	5,60,430	5,73,540	5,76,990	5,79,990	5,82,990	5,85,990
		1st five years .			26,71,050				28,99,500		
Establishment		80,000	80,000	80,000	80,000	80,000	92,000	92,000	92,000	92,000	92,000
				4,00,000					4,60,000		
Travelling allowances ..		85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000
				4,25,000					4,25,000		

Malaria (Total Expenditure).

	1st five years Rs.	1st ten years Rs.
Non-recurring :		
Centre	1,46,800	2,66,800
Provinces	7,70,000	17,60,000
Total ..	*9,15,800*	*20,26,800*
Recurring :		
Centre	47,18,284	1,32,87,136
Provinces	2,04,89,326	5,04,22,361
Total .. Rs.	*2,52,07,610*	*6,37,09,497*

Centrally Administered Areas.

Non-recurring—details of the above expenditure.

1st five years :

Headquarters Organisation.

For one Governor's Province ..	Rs. 10,000		
For one Centrally Administered Province	2/3 (10,000)	=Rs.	6,700
For four Centrally Administered Provinces		= Rs.	26,800
Maintenance	Rs. 1,608		
Malaria Control Units :			
For one control unit	Rs. 6,000		
For five control units in each of these areas .. (6,000×5)		=Rs.	30,000
In all the four areas (30,000×4)		= Rs.	1,20,000
Total non-recurring expenditure (1st five years) ..	=	Rs.	*1,46,800*
Maintenance	Rs. 7,200		
Total Maintenance	=	Rs.	8,808

2nd five years :

Headquarters' Organisation .. *Nil*

Malaria Control Units—There are established five additional control units in each area. Total non-recurring expenditure for them will be Rs. *1,20,000*

Maintenance—Headquarters .. .. .. Rs. 4,020

Total Rs. *2,66,800*

Malaria Control Units (old)	18,000	
Malaria Control Units (new)	7,200	..
Total ..	..	29,220
Total maintenance for the first ten years ..		**38,028**

MALARIA—*contd.*

Provinces.

(Non-recurring)

At each headquarters Rs. 10,000 for non-recurring contingencies have been provided, so, for the eleven provinces a sum of Rs. *1,10,000* has been provided.

For ten control units in each province we have provided a sum of Rs. 60,000. And for the eleven Provinces this sum will be Rs. 6,60,000.

In this way a sum of Rs. *7,70,000* for non-recurring expenditure for Malaria, in the first five years, has been included in the estimates.

Maintenance at 3 p. c. per year on the above sum .. Rs. 46,200

In the second five years for additional fifteen control units we have provided a sum of Rs. 9,90,000, on the above basis.

		Rs.
Total or ten years	Rs.	9,90,000
	Rs.	6,60,000
	Rs.	16,50,000
Headquarters..		1,10,000
	Rs.	*17,60,000*
Maintenance	Rs.	1,21,100

RECURRING (Centre).

	Rs.	Rs.
1st five years :		
Salaries of staff of headquarter's organisation of one Governor sProvince	3,63,816	
Salaries o staff for the Centrally Administere Area=2/3×3,63,816	2,42,544	
Salaries of staff for four areas	9,70,176	
Salaries of staff of one Malaria Control Unit ..		1,49,465
Salaries of staff of five Malaria Control Units (or one Centrally Administered area)		7,47,325
Salaries of staff for four such areas		29,89,300
Total salaries for the first five years		39,59,476
Total maintenance		8,808
Malaria Institute of India @ Rs. 1·5 lakhs per year		7,50,000
Total ..		47,18,284

2nd five years :	Rs.	
Staff salaries for one unit for a Governor's Province	4,57,256	
Staff salaries of one unit for a Centrally Administered Area	3,04,838	
Staff salaries of four Central Administered Areas ..	12,15,352	
Staff salaries of one Malaria Control Unit ..	1,79,249	
Staff salaries of five Malaria Control Units ..	8,96,245	
Staff salaries of all the four Areas	35,84,980	
Staff salaries of the four areas with five new malaria control units established	29,89,300	
Total salaries (second five years)		77,89,632
Total maintenance		20,220
Malaria Institute of India @ 1·5 lakhs per year ..		7,50,000
Total ..		85,68,852
Total for the 1st ten years ..		1,32,87,136

Recurring (Provinces).

Recurring)	Rs.	
Salaries of staff of the headquarters organisation (Malaria) for the first five years	3,63,816	
For eleven Provinces (3,63,816×11)	40,01,976	
For one control unit (salary of staff)	1,49,465	
For ten (in each Province)	14,94,650	
Eleven Provinces	64,41,150	
Total for the first five years		1,64,41,150
		40,01,976
		2,04,43,126
Maintenance		46,200
		2,04,89,326

Recurring)		
Ten years :	Rs.	
For fifteen additional control unit in each province	23,41,975	
Eleven Provinces	2,46,61,725	
For additional two D.A.D.P.H.'s and their organisations (72,020×11)	7,92,220	
Expenditure on previous period's organisations Headquarters Rs. 4,57,256×11	50,29,816	
Control units 1,79,249×10×11	1,97,17,390	
Total for ten years		5,02,61,281
Maintenance		2,21,100
		5,04,22,381

Staff in respect of the headquarters, regional and control unit organisation

Malaria—*contd.*
(Further details).

Name.	No.	Scale of pay.
		Rs.
Headquarters organisation :—		
Malariologist	1	600—40—1,000
Entomologist	1	325—25—650—35—1,000
Sanitary Engineer	1	325—25—650—35—1,000
Overseers	4	100—5—220
Draftsman	1	75—3—135
Antimalaria Officer	1	325—25—650—35—1,000
Laboratory assistants	5	50—5—150
Antimalaria assistants	2	350—25—750
Clerks	3	50—5—150
Insect collectors	8	30—1—50
Inferior servants	2	25—2—55
Sweepers	2	25—1—35
Regional organisation :—		
Deputy	2	325—25—650—35—1,000
Clerks	2	50—5—150
Malaria Control Units :—		
Antimalaria assistant	1	250—25—500
Laboratory assistants	2	50—5—150
Malaria supervisors	5	75—3—90—4—150
Mistrie	1	40—2—60
Field workers	25	25—1—35

TOTAL SALARIES OF A HEADQUARTERS UNIT OF MALARIA ORGANISATION DURING A PERIOD OF TEN YEARS.

	Number.	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Headquarter Unit.											
Malariologist.											
@ Rs. 600—40—1,000	1	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
Entomologist.											
@Rs. 325—25—650—35—1,000 ..	1	3,900	4,200	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600
Sanitary Engineer.											
@ Rs. 325—25—650—35—1,000 ..	1	3,900	4,200	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600
Overseers.											
@ Rs. 100—5—200	4	4,800	5,040	5,280	5,520	5,760	6,000	6,240	6,480	6,720	6,960
Draftsman.											
@ Rs. 75—3—135	1	900	936	972	1,008	1,044	1,080	1,116	1,152	1,188	1,224
Antimalaria Officer.											
@ Rs. 325—25—650—35—1,000 ..	1	3,900	4,200	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600
Antimalaria Assistants											
@Rs. 350—25—750	2	6,000	6,600	7,200	7,800	8,400	9,000	9,600	10,200	10,800	11,400
Laboratory Assistants.											
@Rs. 50—5—150	5	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Clerks.											
@ Rs. 50—5—150	3	1,800	1,980	2,160	2,340	2,520	2,700	2,880	3,060	3,240	3,420
Insect Collectors.											
@ Rs. 30—1—50	8	2,880	2,976	3,072	3,168	3,264	3,360	3,456	3,552	3,648	3,744
Inferior Servants.											
@ Rs. 25—2—55	2	600	648	696	744	792	840	888	936	984	1,032
Sweepers.											
@ Rs. 25—1—35	2	600	648	696	744	792	840	888	936	984	1,032
Travelling allowance	..	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800	7,800
Contingencies (recurring)	..	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Leave & pension charges	..	7,896	8,722	9,547	10,373	11,198	12,024	12,850	13,675	14,501	15,326
	..	65,176	68,930	72,683	76,437	80,590	83,944	87,698	91,451	95,205	98,958

MALARIA (FURTHER DETAILS—*contd.*)

	Number.	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
One Malaria Control Unit.											
Antimalaria Assistant.											
@ Rs. 250—25—750	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Laboratory Assistants.											
@ Rs. 50—5—150	2	1,200	1,320	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280
Malaria Supervisors.											
@ Rs. 75—3—90—4—150	5	4,500	4,680	4,860	5,040	5,220	5,400	5,640	5,880	6,120	6,360
Mistrie.											
@ Rs. 40—2—60	1	480	504	528	552	576	600	624	648	672	696
Labourers.											
@ Rs. 25—1—35	25	7,500	7,800	8,100	8,400	8,700	9,000	9,300	9,600	9,900	10,200
Travelling allowances	..	900	900	900	900	900	900	900	900	900	900
Contingencies (Recurring)	..	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Pension & Leave charges.	..	2,669	2,817	2,965	3,113	3,261	3,834	4,011	4,157	4,365	4,542
	..	27,749	28,821	29,893	30,965	32,037	33,534	34,695	35,825	37,017	38,178

TUBERCULOSIS.

1. *Hospitals and clinics* :—Tuberculosis hospitals of 200 beds are to be established for units of 10 million population.

33 such hospitals are required for British India by 1951 (estimated population 330 millions).

A central clinic located in the same city as the hospital and smaller clinics at the headquarters of each district are required. The estimates of cost, recurring and non-recurring, for all these institutions are given below :—

Estimates.

	Number of institutions.	Cost. Non-recurring. in lakhs. (Rs. 1,500 per bed).	Cost. Recurring. in lakhs. (Rs. 900 per bed).
200-bed hospitals	33	99·0	59·40
Main clinics	33	33·0 (at one lakh for each).	8·91 (at Rs. 27,000 for each.)
District clinics. (216 districts in the 11 Governors' Provinces). ..	183	82·35 (Rs. 45,000 for each).	29·28 (Rs. 16,000 for each).
Total	249	214·35	97·59

The main clinics located in the cities in which the hospitals are established will be equipped and staffed on a more generous scale than the district clinics. The former will serve as training centres for doctors and health visitors ; the numbers to the trained to meet the requirements of the country are estimated to be 13,000 doctors and 10,000 health visitors.

Strength of staff required for these institutions :—

Each 200-bed hospital will require specially trained doctors at the rate of one doctor per 30-beds or 7 in all.

In the early stages it may be necessary to have 4 doctors specially trained in tuberculosis and 3 untrained ones.

The main clinics located in the cities in which the hospitals are established will require three doctors each. In the beginning they may be two trained and one untrained.

Each district clinic will require 2 doctors, in the initial stages one trained and the other untrained.

A statement showing the strength of the staff required is given below :—

Type of institution.	No. of Institutions.	Strength of staff required (doctors). Number of trained doctors required.	Early stages. Trained.	Untrained.
200-bed hospitals	33	231 (7 for each).	132 (4 for each).	99 (3 for each).
Main clinics	33	99 (3 for each).	66 (2 for each).	33 (1 for each).
District clinics	183	366 (2 for each).	183 (1 for each).	183 (1 for each).
	249	696	381	315

II.—Training Facilities.

(a) *Training of doctors.*

Eight new training centres have been recommended by the Tuberculosis Sub-committee. Of these one relates to Hyderabad and its cost must be deducted. The total cost in respect of the 8 new centres is 32 lakhs (non-recurring) and Rs. 13 lakhs per year (recurring). Reducing these by 1/8th the figures become—

Non-recurring. (in lakhs). Rs.	Recurring. (in lakhs). Rs.
28	11·375

(b) *Training of health visitors.*

Public health nurses, when trained, will take the place of health visitors. These public health nurses will perform various personal health services such as those associated with maternity and child welfare, school health, tuberculosis, venereal diseases, etc. It is considered that ordinarily public health nurses should have special training in tuberculosis for a period of three months.

Three health visitors are required for each of the main clinics and two for each of the district clinics. The total numbers required are shown below :—

Type of institution.	No. of institutions.	No. of health visitors required
Main clinics	33	99 (3 for each).
District clinics	183	366 (2 for each).
	216	465

Number of doctors trained in the first five years.

The existing institutions will train 75 doctors per year. Therefore within the first five years period 75 × 4 (or 300) trained doctors will be provided by the existing institutions.

(Note that the batch trained in the 5th year will not be available for service in the 5th year period).

During the same period of five years the 7 new centres (Hyerdabad is excluded) may function on an average only for three years (they will take time to be established) and two batches of students may alone undergo training. The period of training is actually 9 months but it is expected that there will be only one course each year. If each of the new institutions makes available 12 trained doctors per year their total contribution within the five-year period will be 168. Therefore the total number of trained doctors available within the five-year period will be 468 (300 plus 168).

It will be seen that, if the proposals outlined above for filling only a certain proportion of the posts by doctors with special training in tuberculosis during the first five-year period be accepted, the training facilities outlined above will suffice to provide the staff required for the suggested expansion of tuberculosis medical institutions.

As regards health visitors the question of training public health nurses has been considered elsewhere. The required number can be made available.

III.—Stipends for Doctors and Health Visitors.

Rs. 50 for doctors and Rs. 25 for health visitors are suggested as stipends. The period of training for a doctor is 9 months and that for a health visitor three months.

Cost of stipends for doctors and health visitors.

For 468 doctors at Rs. 50 per month for nine months ..	.. 2·106 lakhs.
For 500 health visitors at Rs. 25 per month for three months (467 are actually required, the remainder is provided for possible wastage during training)	.. 0·375 lakhs.
Total ..	2·481 or roughly 2·50 lakhs.

IV.—Other items of Expenditure.

Other items of expenditure include travelling expenses for poor patients, help to indigent families, aftercare, publicity, etc. On the basis of Rs. 23,500 per annum for a population of three millions suggested by the Tuberculosis Sub-committee the estimate of cost, under these heads, for British India (315 millions) during the first five years will be Rs. 25·85 lakhs.

Estimates of cost in respect of our proposals relating to tuberculosis.

1st five years.	*Non-recurring.* Rs.	*Recurring* Rs.
1. Hospitals & clinics	2,14,35,000	4,87,95,000
2. Training of doctors and health visitors..		
(a) Training institutions	28,00,000	56,87,500
(b) Stipends for doctors and health visitors ..	..	2,50,000
3. Other items of expenditure	..	25,85,000
Total ..	2,42,35,000	5,73,17,500
Maintenance on non-recurring expenditure @ 8 per cent. per year	..	14,54,100
Total ..	..	5,87,71,600

Stipends in the 2nd five years.

45 institutions will be imparting training to doctors.

Number to be made available 45 × 12—	540
Stipends—Doctors 540 × 50 × 9 months—	Rs. 2.43 lakhs.
Health visitors 600 × 25 × 3 months—	0·45 ,,
	Rs. 2·88 or Rs. 3 lakhs.

2nd five years.	*Non-recurring.* Rs.	*Recurring.* Rs.
1. Hospitals &c linics	2,14,35,000	4,87,95,000
2. Training of doctors and health visitors..		
(a) training institutions		56,87,500
(b) stipends		3,00,000
3. Other items of expenditure		25,85,000
4. Maintenance on non-recurring expenditure ..		49,21,350
5. Travelling tuberculosis clinics	1,59,75,000	3,71,15,842
Total ..	3,74,10,000	9,94,04,692
1st five years	2,42,35,000	5,87,71,600
Total for 1st ten years	6,16,45,000	15,81,76,292

TRAVELLING TUBERCULOSIS CLINICS.

N.B.—These clinics will be brought into existence in the second five-year period of the scheme. In the 6th and 7th years of the scheme one such clinic will be attached to each secondary unit, whereas in the 8th, 9th and 10th years two such units will be associated with one secondary unit.

Non-recurring expenditure—

One unit—

	Rs.
Car with general equipment	15,000
X-Ray unit	6,000
Laboratory equipment	1,500
Total ..	22,500

Total non-recurring expenditure—

		No. of clinics started	Additional clinics.	Cost. Rs.
One clinic to each secondary unit.	6th year	216	..	48,60,000
	7th year	..	66	14,85,000
Two clinics to each secondary unit.	8th year	..	294	66,15,000
	9th year	..	..	..
	10th year	..	134	30,15,000
	Total ..	..	..	1,59,75,000

Recurring expenditure—

	Rs.*
6th year	31,97,664
7th year	43,11,672
8th year	88,42,620
9th year	92,07,738
10th year	1,15,56,148
Total ..	3,71,15,842

(* Details given below).

		6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year Rs.
One clinic to each secondary unit.	6th year	(216 × 14,804) 31,97,664	(216 × 15,438)	(216 × 16,071)	(216 × 16,705)	(216 × 17,338)
	7th year	..	33,34,608	34,71,336	36,08,280	37,45,008
Two clinics to each secondary unit.	8th year	..	(66 × 14,804) 9,77,064	(66 × 15,438) 10,18,908	(66 × 16,071) 10,60,686	(66 × 16,705) 11,02,530
	9th year	..	..	[(282 + 12) (14,804)] 43,52,376	(294 × 15,438) 45,38,772	(294 × 16,071) 47,24,874
	10th year	..	..	..	..	..
		..	..	..	..	(2 × 67 × 14,804) 19,83,736
Total ..		31,97,664	43,11,672	88,42,620	92,07,738	1,15,56,148

Total of five years.=Rs. 3,71,15,842.

TRAVELLING TUBERCULOSIS CLINICS.

Salaries, etc., of the staff.	1st year.	2nd year.	3rd year.	4th year.	5th year.
	Rs.	Rs.	Rs.	Rs.	Rs.
1 M.O. at Rs. 250—25—500	3,000	3,300	3,600	3,900	4,200
1 X-Ray technician at Rs. 150—10—250 ..	1,800	1,920	2,040	2,160	2,280
1 Nurse at Rs. 75—5—125 ..	900	960	1,020	1,080	1,140
2 Attendants at Rs. 30—2—50	720	768	816	864	912
Leave salary & pension charges	1,284	1,390	1,495	1,601	1,706
Recurring annual expenditure on the Laboratory ..	3,000	3,000	3,000	3,000	3,000
Propaganda and publicity ..	500	500	500	500	500
Maintenance, transportation and depreciation charges at Rs. 300 p.m.	3,600	3,600	3,600	3,600	3,600
Total ..	14,804	15,438	16,071	16,705	17,338

Estimates of Expenditure on Mental Institutions.

First five years.

	Non-recurring.	*Recurring.*
	Rs.	Rs.
(1) *Improvements in mental hospitals.*		
(*a*) Madras	10,00,000	
(*b*) Poona	10,00,000	
(*c*) Agra	25,00,000	
(*d*) Nagpur	25,00,000	
(*e*) Lahore (new hospital 1,500 beds) ..	50,00,000	
(*f*) Ranchi (European Mental Hospital) ..	10,00,000	
(*g*) Ranchi (Indian Mental Hospital) ..	10,00,000	
(*h*) Thana (Converted into Mental Deficiency or Senile Home)	5,00,000	
	1,45,00,000	
(2) Opening of two new mental hospitals in Bombay & Calcutta	22,00,000	
	1,67,00,000	
(3) Beds—9,000 (Total number in all the above eight mental hospitals including 2 new ones). @ Rs. 1,000 per bed × 5 years		4,50,00,000
(4) Training of nurses in mental hospitals—2 years course—100 nurses to be admitted for training each year. Total number of nurses that require stipends, etc., in first five years = 900. @ 75 per month, 900 × 75 × 12 months		8,10,000
(5) Training of Doctors in U.K. 20 × 8,000 × 5 years		8,00,000
(6) Salaries of Central and Provincial Mental Officers—		
Centre		1,66,560
Provinces		8,80,550
Maintenance charges on capital works ..		10,02,000
Total (recurring) ..		*4,86,59,110*

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Estimates of Expenditure on Mental Institutions.

Second five years.

	Non-recurring. Rs.	Recurring. Rs.
(1) Improvements to the remaining mental hospitals— (a) Ahmedabad (500=beds) (b) Ratnagiri (500=beds) (c) Dharwar (500=beds) (d) Calicut (500=beds) (e) Waltair (500=beds) (f) Bareilly (100=beds) (g) Benares (h) Hyderabad (Sind) (i) Assam (1,000=beds)	@ Rs. 10,00,000 per hospital. 10,00,000 × 9 =	
	90,00,000	
(2) Opening of five new mental hospitals in Madras, Punjab, U. P., Bihar and Central Provinces, each with 500 beds @ Rs. 22 lakhs perhospital for building and equipment	1,10,00,000	
(3) Increasing the bed strength of the two new mental hospitals in Calcutta and Bombay, started in the first five years, from 200 to 500 beds	22,00,000	
Total non-recurring	*2,22,00,000*	
Recurring—		
(4) Total beds—(1st five years 9,000 + 18,000 2nd five years). 9,000. @ Rs. 1,000 per bed per year for five years		9,00,00,000
(5) Training of nurses—50 nurses to be admitted each year for two years course. Each nurse gets Rs. 75 p.m. as stipend during training 550 × 75 × 12		4,95,000
(6) Training of doctors : 20 × 8,000 × 5		8,00,000
(7) Salaries of Central and Provincial Mental Officers attached to the respective health organisations. Centre .. .. Provincial ..		1,73,460 10,32,350
(8) Maintenance charge on non-recurring expenditure		38,37,000
Total (recurring)		9,63,37,810
Grand Total (recurring) of the 1st ten years ..		14,49,96,920

	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Provinces.										
Provincial Mental Officer @ Rs. 600—40—1,000 plus ..	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
250 p.m. as special pay	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Pension @ Rs. 98 p.m. ..	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176
Leave salary	1,530	1,602	1,674	1,746	1,818	1,890	1,962	2,034	2,106	2,178
Allowances	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Total ..	14,906	15,458	16,010	16,562	17,114	17,666	18,218	18,770	19,322	19,874
	1st five years. Rs. 80,050					Second five years. Rs. 93,850.				
					1st ten years.=Rs. 1,73,900.					
For eleven Provinces	1st five years. Rs.80,050 × 11 = Rs. 880,550					1st ten years.=Rs. 19,12,900.				
	Second five years. Rs. 93,850 × 11 = Rs. 10,32,350.									
Centre.										
Mental Officer at the Centre @ Rs. 1,900—50—2,100. ..	22,800	23,400	24,000	24,600	25,200	25,020	25,200	25,200	25,200	25,200
Pension @ Rs. 176 p.m.	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112	2,112
Leave salary @ 15 p.c.	3,420	3,510	3,600	3,690	3,780	3,780	3,780	3,780	3,780	3,780
Allowances	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Total ..	31,932	32,622	33,312	34,002	34,692	34,692	34,692	34,692	34,692	34,692
	1st five years. Rs. 1,66,560.					Second five years. Rs. 1,73,460				
					1st ten years. Rs. 3,40,020					

RECURRING

Provincial Venereal Diseases Organisation and its expenditure.

DETAILS OF EXPENDITURE.		1st. five years.	Ten years.
1. *Provincial organisation.*—	Rs.	Rs.	Rs.
1st year ..	1,80,696		
2nd year ..	1,83,898		
3rd year ..	1,87,081		
4th year ..	1,90,273		
5th year ..	1,93,446	9,35,394×11=1,02,89,334	..
6th year ..	1,97,108		
7th year ..	2,00,317		
8th year ..	2,03,948		
9th year ..	2,06,738		
10th year ..	2,08,949	19,53,454×11=	2,14,87,994
2. *District organisation.*—			
1st year ..	13,497		
2nd year ..	14,039		
3rd year ..	14,582		
4th year ..	15,125		
5th year ..	15,668	72,911×216=1,57,48,776.	..
6th year ..	16,382		
7th year ..	16,934		
8th year ..	17,485		
9th year ..	18,037		
10th year ..	18,589	1,60,338×216=	3,46,33,008
3. *Purchase of Drugs.*—			
1st year ..	4,000		
2nd year ..	4,000		
3rd year ..	4,000		
4th year ..	6,000		
5th year ..	8,000	26,000×216=56,16,000.	..
6th year ..	10,400		
7th year ..	12,800		
8th year ..	15,200		
9th year ..	18,400		
10th year ..	21,600	1,04,400×216= ..	2,25,50,400
Total		3,16,54,110	7,86,71,402

Provincial Venereal diseases organisation and its expenditure.

STAFF :—

Name.	No.	Scale of pay.
Provincial Organisation.—		
Officer in charge	1	Rs. 600—40—1,000.
Assistant Officer in charge	2	Rs. 500—30—800.
Propaganda officer	1	Rs. 350—25—500.
Social workers superviser.	1	Rs. 250—25—500.
Propaganda workers	8	Rs. 100—5—150.
Clerks	3	Rs. 100—5—200.
Accountant	1	Rs 150—5—250.
Stenographers	2	Rs. 100—5—200.
Inferior servants	2	Rs. 25—2—55.
2. District clinic organisation.—		
Medical officer	1	Rs. 250—25—500.
Social worker	1	Rs. 125—5—150.
Clerk	1	Rs. 100—5—200.
Inferior servant	1	Rs. 25—2—55.
Sweeper	1	Rs. 25—1—35.
3. Provision for purchase of drugs.—		

VENEREAL DISEASES—*contd.*

Provincial Organisation (further details).

	Number.	1st year.	2nd year.	3rd year.	4th year	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Officer Incharge .. @Rs. 600—40—1,000.	1	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
Assistant Officer in-charge @Rs. 500—30—800.	2	12,000	12,720	13,440	14,160	14,880	15,600	16,320	17,040	17,760	18,480
Propaganda Officer .. @ Rs. 350—25—500.	1	4,200	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600	6,900
Social Worker Supervisor @ Rs. 250—25—500.	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,100	5,700
Propaganda Workers .. @ Rs. 100—5—150.	8	9,600	10,080	10,560	11,040	11,520	12,000	12,480	12,960	13,440	13,920
Clerks .. .. .. @ Rs. 100—5—200.	3	3,600	3,780	3,960	4,140	4,320	4,500	4,680	4,860	8,040	5,220
Accountant .. .. @ Rs. 150—5—250.	1	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220	2,280	2,340
Stenographers .. .. @ Rs. 100—5—200.	2	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Inferior servants .. @ Rs. 25—2—55.	2	600	648	696	744	792	840	888	936	984	1,032
Propaganda and publicity Rs. 10,000 p.m.		1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000
Travelling allowance ..		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Contingencies		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Pension & leave charges ..		10,296	10,810	11,305	11,809	12,314	13,268	13,789	14,532	14,834	15,357
Total Rs. ..		**1,80,696**	**1,83,898**	**1,87,081**	**1,90,273**	**1,93,466**	**1,97,108**	**2,00,317**	**2,03,948**	**2,06,738**	**2,09,949**

VENEREAL DISEASES—*contd.*

District Clinic (further details).

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Medical Officer .. .. @ Rs. 250—25—500.	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Social Worker .. @ Rs. 125—5—150.	1	1,500	1,560	1,620	1,680	1,740	1,800	1,860	1,920	1,980	2,140
Clerk .. .. @ Rs. 100—5—200.	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Inferior servant .. @ Rs. 25—2—55.	1	300	324	348	372	396	420	444	468	492	516
Sweeper .. .. @ Rs. 25—1—35.	1	300	312	324	336	348	360	372	384	396	408
Contingencies .. .. @ Rs. 6,000 a year.		6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Pension & leave salary charges		1,197	1,283	1,370	1,457	1,544	1,802	1,898	1,993	2,089	2,185
Total Rs. ..		13,497	14,039	14,582	15,125	15,668	16,382	16,934	17,485	18,037	18,589

Estimate of expenditure on Leprosy organisations.

LEPROSY (CENTRE).

Central Leprosy Institute.	1st five years.	1st ten years.
	Rs.	Rs.
Non-recurring expenditure	5,00,000	5,00,000
Recurring :		
Maintenance @ 3 p.c. per year on the above non-recurring cost	30,000	1,05,000
*Annual recurring cost including salaries of staff, etc.	4,30,386	9,39,462
Total (Recurring) ..	4,60,386	10,44,462

*Annual recurring cost from year to year :

	Rs.	1st 5 years. Rs.	1st ten years. Rs.
1st year	79,782		
2nd year	82,930		
3rd year	86,077		
4th year	89,223		
5th year	92,372	4,30,386	
6th year	95,520		
7th year	98,663		
8th year	1,01,815	..	
9th year	1,04,963		
10th year	1,08,110		9,39,462

Salaries of Staff of the Central Leprosy Institute (further details).

	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Chief .. 1 .. .. @ 1,250—50—1,750.	15,000	15,600	16,200	16,800	17,400	18,000	18,600	19,200	19,800	20,400
Senior Assistants -2 .. @ Rs. 800—40—1,200	19,200	20,160	21,120	22,080	23,040	24,000	24,960	25,920	26,880	27,840
Junior Assistants 2 .. @ Rs. 600—30—900	14,400	15,120	15,840	16,560	17,280	18,000	18,720	19,440	20,160	20,880
Social worker .. 1 .. @ Rs. 375—25—750.	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600	6,900	7,200
Other staff including ministerial staff and including contigencies @ Rs.15,000 per year.	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Pension & leave salary charges ..	11,682	12,250	12,817	13,385	13,952	14,520	15,088	15,655	16,223	16,790
Total Rs. ..	79,782	82,930	86,077	89,225	92,372	95,520	98,668	1,01,815	1,04,963	1,08,110

Leprosy (*contd.*)

Province :

Non-recurring.	1st five years. Rs.	1st ten years. Rs.
I. Increasing the existing bed provision by 14,000 beds for institutional treatment, in the first five years @ Rs. 1,000 per bed per year	1,40,00,000	—
Adding a similar provision during the second five years	..	2,80,00,000
Total (non-recurring) ..	1,40,00,000	2,80,00,000

(*N.B.*—Working details are given below, item by item.)

II. *Recurring.*		
Maintenance @ 3 p.c. per year on the above non-recurring expenditure, assuming the same annual increase in the number of beds	8,40,000	37,80,000
(*b*) Annual recurring cost for maintaining from year to year the above-mentioned beds @ Rs. 400 per bed per year	1,68,00,000	6,16,00,000
(*c*) Cost of Provincial Leprosy Organisation, after reduction of the total by one-third, to conform more correctly to differing provincial requiremedts.	24,94,646	55,79,926
(*d*) Propaganda and Publicity @ Rs. 5,000 per province per year	2,75,000	5,50,000
(*e*) Financial help to voluntary organisations @ Rs. 125 per bed per year, for 10,000 beds during the first five years	62,50,000	
Adding a similar provision during the second five years	..	1,87,50,000
(*f*) Development of Group Isolation Colonies @ Rs. 3 lakhs per year	15,00,000	30,00,000
Total (recurring) ..	2,81,59,646	9,32,59,926

(*a*) It is assumed that the increase of 14,000 beds is affected evenly over the first five years, or 2,800 beds are added every year. A similar annual provision will be added during the second five-year period also.

	Maintenance @ 3 p.c. p. a.	
	1st five years.	1st ten years.
1st year's capital expenditure Rs. 28,00,000	3,36,000	7,56,000
2nd year's capital expenditure Rs. 28,00,000	2,52,000	6,72,000
3rd year's capital expenditure Rs. 28,00,000	1,68,000	5,88,000
4th year's capital expenditure Rs. 28,00,000	84,000	5,04,000
5th year's capital expenditure Rs. 28,00,000	..	4,20,000
	8,40,000	
6th year's capital expenditure Rs. 28,00,000	..	3,36,000
7th year's capital expenditure Rs. 28,00,000	..	2,52,000
8th year's capital expenditure Rs. 28,00,000	..	1,68,000
9th year's capital expenditure Rs. 28,00,000	..	84,000
10th year's capital expenditure Rs. 28,00,000	..	..
		37,80,000

Leprosy (*contd*).

(*b*)

	New beds.	Total beds.	Total maintenance.	
			Rs.	
1st year	2,800	2,800	11,20,000	
2nd year	2,800	5,600	22,40,000	
3rd year	2,800	8,400	33,60,000	
4th year	2,800	11,200	44 80,000	Rs.
5th year	2,800	14,000	56,00,000	1,68,00,000
6th year	2,800	16,800	67,20,000	
7th year	2,800	19,600	78,40,000	
8th year	2,800	22,400	89,60,000	
9th year	2,800	25,200	1,00,80,000	Rs.
10th year	2,800	28,000	1,12,00,000	6,16,00,000

(*c*) Details of annual expenditure on Provincial Leprosy Organisations.

(Please see next page also).

	Rs.		
1st year	62,333		
2nd year	65,553		
3rd year	67,554		
4th year	70,764		
5th year	73,975	$\frac{3,40,179 \times 11 \times 2}{3}$	= 24,94,646
6th year	77,644		
7th year	80,871		
8th year	84,320		
9th year	87,328		
10th year	90,557	$\frac{7,60,899 \times 11 \times 2}{3}$ =	55,79,926

(*d*) $5,000 \times 11 \times 5 = 2,75,000$ 1st five years. 3
1st ten years $2,75,000 + 2,75,000 =$ 5,50,000

(*e*) 1st five years = $10,000 \times 125 \times 5 = 62,50,000$
2nd five years = $20,000 \times 125 \times 5 = 1,25,00,000$
Total ten years .. $1,25,00,000 + 62,50,000 =$ 1,87,50,000

(*f*) 1st five years .. $3,00,000 \times 5 = 15,00,000$
Ten years .. $15,00,000 + 15,00,000 =$ 30,00,000

Leprosy (contd.) (Further details.)
(Provincial Organisation).

	Number.	1st year.	2nd year.	3rd year.	4th year.	5th year.	6th year.	7th year.	8th year.	9th year.	10th year.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Officer in charge .. @ Rs. 600—40—1,000.	1	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
Assistant Officer in charge @ Rs. 500—30—800.	2	12,000	12,700	13,440	14,160	14,880	15,600	16,320	17,040	17,760	18,480
Propaganda Officer .. @ Rs. 350—25—500.	1	4,200	4,500	4,800	5,100	5,400	5,700	6,000	6,300	6,600	6,900
Social Worker Supervisor @ Rs. 250—25—500.	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Propaganda Workers .. @ Rs. 100—5—150.	8	9,600	10,080	10,560	11,040	11,520	12,000	12,480	12,960	13,440	13,920
Clerks .. .. .. @ Rs. 100—5—200.	3	3,600	3,780	3,960	4,140	4,320	4,500	4,680	4,860	5,040	5,220
Accountant .. .. @ Rs. 150—5—250.	1	1,800	1,860	1,920	1,980	2,040	2,100	2,160	2,220	2,280	2,340
Stenographers .. .. @ Rs. 100—5—200.	2	2,400	2,520	2,640	2,760	2,880	3,000	3,120	3,240	3,360	3,480
Inferior Servants .. @ Rs. 25—2—55.	2	600	648	696	744	792	840	888	936	984	1,032
Travelling allowance ..		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Contingencies		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Pension & leave salary charges		10,296	10,810	11,305	11,809	12,314	13,268	13,789	14,524	14,834	15,357
Total Rs. ..		62,333	65,553	67,554	70,764	73,975	77,644	80,871	84,320	87,328	90,557

SCHOOL HEALTH.

1st five years.

Non-recurring :

For one province	Rs. 12,000	
For eleven provinces	12,000 × 11 =	1,32,000

Recurring :

		Rs.
Maintenance at 3 p.c. per year on the non-recurring expenditure	7,920	-
*Salaries of staff for one province for five years	1,71,610	
,, for eleven provinces		.. 18,87,710
		7,920
		18,95,630

**Salaries of staff.*

	1st five years	*1st ten years.*
	Rs.	Rs.
1st year 31,324	1,71,610 × 11 = 18,87,710	3,81,067 × 11 =
2nd ,, 32,823		
3rd ,, 34,322		
4th ,, 35,821		
5th ,, 37,320		
6th ,, 38,888		
7th ,, 40,390		
8th ,, 41,891		
9th ,, 43,393		
10th ,, 44,895		
Total recurring—ten years		41,91,737
		27,720
		42,19,457

Ten years,

No additional capital expenditure.

	Rs.
Non-recurring	1,32,000
Recurring	81,43,993
Maintenance	27,720

School Medical Service.

(Further details).

	Number.	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Officer in Charge @ Rs. 600—40—1,000	1	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
Assistant officer in Charge @ Rs. 500—30—800 ..	1	6,000	6,360	6,720	7,080	7,440	7,800	8,160	8,520	8,880	9,240
Nurse Supervisor @ Rs. 250—25—500	1	3,000	3,300	3,600	3,900	4,200	4,500	4,800	5,100	5,400	5,700
Clerk @ Rs. 100—5—200	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Stenographer @ Rs. 100—5—200	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Inferior servant Rs. 25—2—55	1	300	324	348	372	396	420	444	468	492	516
Travelling allowance	..	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Contingencies	..	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Pension & Leave charges	..	5,424	5,639	5,854	6,069	6,284	6,568	6,786	7,003	7,221	7,439
Total Rs.	..	31,324	32,823	34,322	35,821	37,320	38,888	40,390	41,891	43,393	44,895

NUETION.

1st five years.

Non-recurring :

			Rs.
Rs. 55,000 for one Province For the eleven Provinces ..	..	.. 55,000×11=	6,05,000
Maintenance at 3 p.c. per year	..	.. .. ..	36,300

Recurring :

*Salaries of staff					
For one province for five years	3,09,166	..	..	..	
For eleven provinces ..	..	..	..	..	34,00,826
					36,300
					34,37,126

**Salaries of staff*

	1st five years. Rs.		*1st ten years.* Rs.
1st year	39,028+10,440+6,890=56,358		
2nd ,,	40,499+11,233+7,364=59,096		
3rd ,,	41,969+12,027+7,837=61,833		
4th ,,	43,440+12,820+8,310=64,570		
5th ,,	44,911+13,614+8,784=67,309	3,09,166×11 =34,00,826	
6th ,,	46,695+14,656+9,416=70,767		
7th ,,	48,181+15,463+9,898=73,542		
8th ,,	49,668+16,270+10,379=76,317		
9th ,,	51,154+17,077+10,861=79,092		6,90,751×11
10th ,,	52,641+17,884+11,34=8,167		75,98,261

Second five years.

Non-Recurring—Nothing additional :

Total for ten years—				
Non-recurring	..	..	6,05,000	
Recurring ..	..	..	75,98,261	77,25,311
Maintenance	..	..	1,27,050	

SHORT-TERM PROVINCIAL NUTRITION STAFF.
Further details.

Name.	No.	Scale of pay.
***Staff*:—**		
Chief Nutrition Officer	1	Rs. 600—40—1,000
***Field*:—**		
Field workers	3	Rs. 300—20—500
Inferior servants	3	Rs. 25—2—55
***Laboratory*:—**		
Chief Assistant (Chemistry & Biochemistry) ..	1	Rs. 300—20—500
Chemist	1	Rs. 150—10—250
Laboratory Assistants	3	Rs. 50—5—100
Animal Attendants	8	Rs. 25—2—55
Inferior servants	2	Rs. 25—2—55
***Office*:—**		
Stenographer	1	Rs. 75—5—150
Typist clerks	2	Rs. 60—5—100
Statistician	1	Rs. 150—10—250
Artist	1	Rs. 100—5—150
Inferior servant	2	Rs. 25—2—55

Short-term Provincial Nutrition Staff.

Further details.

	Number.	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Staff.											
Chief Nutrition Officer @ Rs. 600—40—1,000	1	7,200	7,680	8,160	8,640	9,120	9,600	10,080	10,560	11,040	11,520
Field.											
Field workers @ Rs. 300—20—500 ..	3	10,800	11,520	12,240	12,960	13,680	14,400	15,120	15,840	16,560	17,280
Inferior servants @ Rs. 25—2—55 ..	3	900	972	1,044	1,116	1,188	1,260	1,032	1,404	1,476	1,548
Recurring expenditure on chemicals, travelling and miscellaneous		16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Pension & Leave salary		4,128	4,327	4,525	4,724	4,923	5,435	5,649	5,864	6,078	6,293
Total Rs.		39,028	40,499	41,969	43,440	44,911	46,695	48,181	49,668	51,154	52,641
Laboratory.											
Chief Assistant @ Rs. 300—20—500 ..	1	3,600	3,840	4,080	4,320	4,560	4,800	5,040	5,280	5,520	5,760
Chemist @ Rs. 150—10—250	1	1,800	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Laboratory Assistants @ Rs. 50—5—100 ..	3	1,800	1,980	2,160	2,340	2,520	2,700	2,880	3,060	3,240	3,420
Animal attendants @ Rs. 25—2—55 ..	3	900	972	1,044	1,116	1,188	1,260	1,332	1,404	1,476	1,548
Inferior Servants @ Rs. 25—2—55 ..	3	900	972	1,044	1,116	1,188	1,260	1,332	1,404	1,476	1,548
Pension & leave salary		1,440	1,549	1,659	1,768	1,878	2,236	2,359	2,482	2,605	2,728
Total Rs.		10,440	11,233	12,027	12,820	13,614	14,656	15,463	16,270	17,077	17,884

Nutrition.

(*Further details—contd.*)

	Number.	1st year. Rs.	2nd year. Rs.	3rd year. Rs.	4th year. Rs.	5th year. Rs.	6th year. Rs.	7th year. Rs.	8th year. Rs.	9th year. Rs.	10th year. Rs.
Office.											
Stenographer @ Rs. 75—5—150	1	900	960	1,020	1,080	1,140	1,200	1,260	1,320	1,380	1,440
Typist clerks @ Rs. 60—5—100	2	1,440	1,560	1,680	1,800	1,920	2,040	2,160	2,280	2,400	2,520
Statistician @ Rs. 150—10—250	1	18,00	1,920	2,040	2,160	2,280	2,400	2,520	2,640	2,760	2,880
Artist @ Rs. 100—5—150	1	1,200	1,260	1,320	1,380	1,440	1,500	1,560	1,620	1,680	1,740
Inferior Servants @Rs. 25—2—55	2	600	648	696	744	792	840	888	936	984	1,032
Pension and Leave salary	..	950	1,016	1,081	1,146	1,212	1,436	1,510	1,583	1,657	1,730
Total Rs. ..		6,890	7,364	7,837	8,310	8,784	9,416	9,898	1,0379	10,861	11,342

PROFESSIONAL EDUCATION.

Estimates of non-recurring *expenditure during the first five years.*

	Rs.	Rs.
Professional Education—		
(*a*) (*i*) Upgrading (9) at Rs. 27·0 lakhs per college	2,43,00,000	
Conversion (8) at Rs. 77·0 lakhs per college	6,16,00,000	
Creation (7) at Rs. 102·0 lakhs per college	7,14,00,000	*15,73,00,000*
(*ii*) Accommodation for personnel under training ; 24 to each of the 15 primary units attached to a medical college for 24 colleges		*1,08,00,000*
(*b*) Dental Education—		
(*i*) 2 new colleges at Rs. 25 lakhs per col ege	50,00,000	
(*ii*) Improving the Lahore College	10,00,000	*60,00,000*
(*c*) Pharmaceutical Education—		
(*i*) 50 teaching centres for Licentiate course at Rs. 10,000 per centre	5,00,000	
(*ii*) 5 colleges for graduate course at Rs. 25,000 per college	1,25,000	*6,25,000*
(*d*) Public Health Engineering at Rs. 2 lakhs per centre		*6,00,000*
(*e*) Nursing—		
(*i*) 16 Preliminary centres at Rs. 1·25 lakhs per centre	20,00,000	
(*ii*) 100 Centres for training of Nurse pupils	3,00,00,000	
(*iii*) For training 4,000 midwives each year	1,00,00,000	*4,20,00,000*
(*f*) Improvement to 48 associated hospitals attached to 24 colleges at Rs. 1 lakh per college		*48,00,000*
(*g*) Medical Research in Colleges at Rs. 1 lakh per college for 24 colleges ..		*24,00,000*
(*h*) Hospital Social Workers		
Total		22,45,25,000

PROFESSIONAL EDUCATION.

Estimates of non-recurring *expenditure during second five years and during the first ten years.*

		Second five years. Rs.	Total ten years. Rs.
Professional Education—			
(a) (i) Upgrading (7) at Rs. 27·0 lakhs per college		1,89,00,000	
Conversion (3) at Rs. 77·0 lakhs per college		2,31,00,000	
Creation (9) at Rs. 102·0 lakhs per college		9,18,00,000	
		13,38,00,000	*29,11,00,000*
(ii) Accommodation for personnel under training 24 to each of the 15 primary units attached to a medical college for 19 colleges		85,50,000	*1,93,50,000*
(b) Dental Education— Three new colleges at Rs. 25 lakhs per college		75,00,000	*1,35,00,000*
(c) Pharmaceutical Education—	Rs.		
(i) 50 teaching centres for Licentiates course at Rs. 10,000 per centre ..	5,00,000		
(ii) 5 colleges for graduates course at Rs. 25,000 per college	1,25,000	6,25,000	*12,50,000*
(d) Public Health Engineering— Two new centres at Rs. 2 lakhs each ..		4,00,000	*10,00,000*
(e) Nursing—			
(i) 16 preliminary centres at Rs. 1·25 lakhs per centre	20,00,000		
(ii) 100 Centres for pupil nurses	3,00,00,000		
(iii) For training 4,000 midwives at Rs. 25,000 for each ..	1,00,00,000		
		4,20,00,000	*8,40,00,000*
(f) 38 Associated hospitals to 19 colleges at one lakh per hospital		38,00,000	*86,00,000*
(g) Medical Research in 19 colleges at Rs. one lakh per college		19,00,000	*43,00,000*
(h) Hospital Social Workers		..	..
Total ..		19,85,75,000	42,31,00,000

Cost of accommodation for personnel under training in primary units attached to Medical Colleges.

Floor space area. For one	Floor space area. For 24	Cost per sq. ft.	Total cost.
250 sq. ft.	6,000 sq. ft.	Rs. 5	Rs. 30,000
One college		= Rs. 30,000 × 15 =	4,50,000
1st five years for 24 colleges		= Rs. 24 × 4,50,000 =	*1,08,00,000*
2nd five years for 19 colleges		= Rs. 19 × 4,50,000 =	*85,50,000*

PROFESSIONAL EDUCATION.

Estimates of recurring expenditure for the first five years.

	Rs.	Rs.
(1) Professional Education—		
(*a*) Upgrading (9 colleges) at Rs. 8·25 lakhs per year per college	3,71,25,000	
Conversion (8 colleges) at Rs. 17·25 lakhs per year per college	6,90,00,000	
Creation (7 colleges) at Rs. 17·25 lakhs per year per college	6,03,75,000	
		16,65,00,000
(*b*) Dental Education—		
(*i*) Two new colleges at Rs. 5 lakhs per college per year	50,00,000	
(*ii*) Improving the Lahore College at Rs. 5 lakhs per year	25,00,000	
		75,00,000
(*c*) Pharmaceutical Education—		
(*i*) 50 teaching centres for Licentiate course at Rs. 6,000 per centre per year ..	15,00,000	
(*ii*) 5 colleges for graduate course at Rs. 10,000 per college per year ..	2,50,000	
(*iii*) Provincial Pharmaceutical Council at Rs. 10,000 per province per year ..	5,50,000	
		23,00,000
(*d*) Public Health Engineering. 3 training centres at Rs. 50,000 per year per centre		*7,50,000*
(*e*) Provincial Sanitary Boards at Rs. 5,000 per year per board (one board for each province)		*2,75,000*
(*f*) Nursing—		
(*i*) 16 preliminary training centres at Rs. 50,000 per centre per year ..	40,00,000	
(*ii*) 100 centres for training of pupil nurses at Rs. 1·5 crores per year	7,50,00,000	
(*iii*) Training of 4,000 midwives each year at Rs. 49 lakhs per year	2,45,00,000	
(*iv*) Refresher courses at Rs. 0·45 lakhs per year	2,25,000	
(*v*) Text books at Rs. 0·25 lakh per year	1,25,000	
		10,38,50,000
(*g*) Health Assistants		*31,68,000*
(*h*) Hospital Social Workers		*5,78,420*
(*i*) Foreign scholarships at Rs. 3 lakh per year		*15,00,000*
(*j*) Improvements to 48 associated hospitals for the training of internees (24 colleges) at Rs. 10,000 per hospital per year ..		*24,00,000*
(*k*) Five institutions for postgraduate medical education at Rs. 50,000 per centre per year		*12,50,000*
(*l*) Medical research in colleges (24 colleges) at Rs. 0·25 lakh per year per college ..		*30,00,000*
(*m*) Scholarships at Rs. 1,000 per year per student for 50 p.c. of the total number of admissions during the first five years ..		*1,34,40,000*

PROFESSIONAL EDUCATION.

Estimates of recurring expenditure for the second five years and first ten years.

	Second five years. Rs.	First ten years. Rs.
(*a*) (*i*) Upgrading (7 colleges) at Rs. 8·25 lakhs per college per year	2,88,75,000	
(*ii*) Conversion (3 colleges) at Rs. 17·25 lakhs per college per year	2,58,75,000	
(*iii*) Creation (9 colleges) at Rs. 17·25 lakhs per college per year	7,76,25,000	
	13,23,75,000	*29,88,75,000*
(*b*) Dental Education— Three new colleges at Rs. 5 lakhs per college per year	75,00,000	*1,50,00,000*
(*c*) Pharmaceutical Education— (*i*) 50 teaching centres for Licentiates course at Rs. 6,000 per centre per year ..	15,00,000	
(*ii*) Five colleges for graduate course at Rs. 10,000 per college per year	2,50,000	
(*iii*) Provincial Pharmaceutical Council at Rs. 10,000 per province per year	5,50,000	
	23,00,000	*46,00,000*
(*d*) Public Health Engineering— *Two* training centres at Rs. 50,000 per centre per year	5,00,000	*12,50,000*
(*e*) Provincial Sanitary Boards at Rs. 5,000 per board per year	2,75,000	*5,50,000*
(*f*) Nursing— (*i*) The remaining 16 preliminary training centres at Rs. 50,000 per centre per year	40,00,000	
(*ii*) 100 centres for training pupil nurses at Rs. 1·5 crores per year for all of them ..	7,50,00,000	
(*iii*) Training of 4,000 midwives at Rs. 49 lakhs per year	2,45,00,000	
(*iv*) Refresher courses at Rs. 0·45 lakh per year	2,25,000	
(*v*) Text books at Rs. 0·25 lakh per year ..	1,25,000	
	10,38,50,000	*20,77,00,000*
(*g*) Health Assistants	31,68,000	*63,36,000*
(*h*) Hospital social workers	..	..
(*i*) Foreign scholarships at Rs. 3 lakhs per year ..	15,00,000	*30,00,000*
(*j*) 38 Associated hospitals for the training of internees at Rs. 10,000 per year, per hospital ..	19,00,000	*43,00,000*
(*k*) Remaining five institutions for post-graduate medical education at Rs. 50,000 per centre per year	12,50,000	*25,00,000*
(*l*) Medical research in 19 colleges at Rs. 0·25 lakh per college per year	23,75,000	*53,75,000*
(*m*) Scholarships at Rs. 1,000 per year per student for 50 p.c. of the total number of admissions ..	4,98,00,000	*6,32,40,000*

	Maintenance at 3 p. c. per year.
(1) *Professional Education :—*	Rs.
1st five years.—	
Total capital expenditure during the first five years is ..	22,45,25,000
We assume that one fifth of this amount will be spent each year	
Maintenance at 3% per year will be $\frac{22,45,25,000 \times 3 \times 1 \times 10}{5 \times 5 \times 100 \times 1}$ .. =	*1,34,71,500*
2nd five years—	
New capital expenditure on all the schemes connected with Professional Education is	19,85,75,000
Maintenance on this amount will be calculated on the same basis as on the capital expenditure during the first five years— $\frac{10 \times 19,85,75,000 \times 3}{1 \times 5 \times 100}$ =	1,19,14,500
Calculation of maintenance on those organisations which had come into being during the first five years will, however, be calculated for all the five years at 3 per cent. per annum in the second five year period— $\frac{22,45,25,000 \times 3 \times 5}{100 \times 5}$ =	3,36,78,750
Total maintenance charges for the second five years	3,36,78,750 1,19,14,500
	4,55,93,250
Maintenance charges for the *first ten years*	4,55,93,250 1,34,71,500
	5,90,64,750

First five years: Expansion of Medical Colleges.

	Improvement.			Conversions.			New Colleges.		
		Recurring. (Rs. in lakhs)	Non-recurring. (Rs. in lakhs)		Recurring. (Rs. in lakhs)	Non-recurring. (Rs. in lakhs)		Recurring. (Rs. in lakhs)	Non-recurring. (Rs. in lakhs)
Madras	(2)	12+4·5*	50+4·0*		..	..	(2)	30+4·50*	200+4·0*
Bombay	(1)	6+2·25*	25+2·0*	(1)	15+2·25*	75+2·0*	(1)	15+2·25*	100+2·0*
Central Provinces ..		..	..	(1)	15+2·25*	75+2·0*		..	..
Orissa		..	..	(1)	15+2 25*	75+2·0*		..	..
Bengal	(1)	6+2·25*	25+2·0*	(2)	30+4·50*	150+4·0*	(1)	15+2·25*	100+2·0*
Bihar	(1)	6+2·25*	25+2·0*	(1)	15+2·25*	75+2·0*		..	..
United Provinces	(1)	6+2·25*	25+2·0*		..	..	(2)	30+4·50*	200+4·0*
Punjab	(2)	12+4·50*	50+4·0*	(1)	15+2·25*	75+2·0*		..	..
Sind		..	..	(1)	15+2·25*	75+2·0*		..	..
Delhi	(1)	6+2·25*	25+2·0*		..	..	(1)	15+2·25*	100+2·0*
		54+20·25	225+18·0	(8)	120+18·00	600+16·0	(7)	105+15·75	700+14·0

Totals—	Expenditure.	Recurring. (Rs. in lakhs)	Non-recurring. (Rs. in lakhs)
Improvement ..	(9)	54+20·25	225+18·0
Conversion	(8)	120+18·00	600+16·0
Creation	(7)	105+15·75	700+14·0
		279+54	1525+48·0
		333	1573

*Recurring and Non-recurring expenditure in connection with a Department of Preventive & Social Medicine.

It has been assumed that the improvement of colleges, so as to admit 120 students each year, will be completed during the first year as well as the conversion of schools into colleges and that the newly created colleges will begin to function from the third year.

Second five years —Expansion of Medical Colleges.

	Improvement.			Conversion.			New Colleges.		
		Recurring. Rs. (in lakhs)	Non-recurring. Rs. (in lakhs)		Recurring. Rs. (in lakhs)	Non-recurring. Rs. (in lakhs)		Recurring. Rs. (in lakhs)	Non-recurring. Rs. (in lakhs)
Madras	(2)	12+4·50*	50+4·0*		..	..	(3)	45+6·75*	300+6·0*
Eombay	(1)	6+2·25*	25+2·0*		..	..	(1)	15+2·25*	100+2·0*
Central Provinces ..		..	..		..	..	(1)	15+2·25*	100+2·0*
Orissa	(1)	6+2·25*	25+2·0*		..	..		..	..
Bengal	(1)	6+2·25*	25+2·0*	(3)	45+6·75*	225+6·0*	(1)	15·+2·25*	100+2·0*
Bihar		..	..		..	..		..	..
United Provinces	(1)	6+2·25*	25+2·0*		..	..	(2)	30+4·50*	200+4·0*
Punjab	(1)	6+2·25*	25+2·0*		..	..	(1)	15+2·25*	100+2·0*
Sind		..	..		..	..		..	..
Delhi		..	..		..	..		..	..
	(7)	42+15·75*	175+14·0*	(3)	45+6·75*	225+6·0*	(9)	135+20·25*	900+18·0*

Totals—	Expenditure.		
		Recurring. (Rs. in lakhs)	Non-recurring. (Rs. in lakhs)
Improvement ..	(7)	42+15·75	175+14·0
Conversion	(3)	45+6·75	225+6·0
Creation	(9)	135+20·25	900+18·0
Total (in lakhs) ..		222+42·75	1300+38·00
		264·75	1338·00

*Recurring and non-recurring expenditure in connection with a Department of Preventive & Social Medicine.

Years.	No. of admissions.	50 per cent. of this number.	Duration of scholarship in the two periods.		Amount payable @ Rs. 1,000 per year to each student.	
			1st five years.	2nd five years.	1st five years.	2nd five years.
					Rs.	Rs.
1st year	2040	..	..	..	..	..
2nd year	2040	1020	4 years	1 year	40,80,000	10,20,000
3rd year	3120	1560	3 years	2 years	46,80,000	31,20,000
4th year	3120	1560	2 years	3 years	31,20,000	46,80,000
5th year	3120	1560	1 year	4 years	15,60,000	62,40,000
					1,34,40,000	
6th year	4200	2100	..	5 years	..	1,05,00,000
7th year	4560	2280	..	4 years	..	91,20,000
8th year	4920	2460	..	3 years	..	73,80,000
9th year	5160	2580	..	2 years	..	51,60,000
10th year	5160	2580	..	1 year	..	25,80,000
	37,440					4,98,00,000

See footnote on page 330

PERSONAL EDUCATION.

Health Assistants.

1st five years.—

Stipend at the rate of Rs. 20 per month per student for 60 students (2 classes in a year)—		Rs.	Rs
6 × 60 × 20	=	7,200	
For two courses ..	=	14,400	
Miscellaneous expenses in connection with the field-training including travelling expenses Rs. 1,000 per month	=	12,000	
Total	=	26,400	
For 24 centres 24 × 26,400	=	6,36,600	
For five years 5 × 6,36,600	..	.. ..	= *31,68,000*

2nd five years—

31,68,000 1st five years.
31,68,000 2nd five years.

63,36,000 Total ten years.

HOSPITAL SOCIAL WORKERS.

1st five years.—

Recurring:

(1) Three trained workers from abroad, one for each centre, will mean Rs. 3 × 52,100 = Rs. 1,56,300

(2) Associated staff—

Basing on the figure in respect of 300 beds (in Peiping).

One year = Rs. 37,020 for one year.

For three years, we need only double this amount which will be Rs. 74,040.

Three centres 3 × 74,040 = Rs. 2,22,120

(3) Expenditure on the training of students abroad = Rs. 2,00,000

TOTAL = Rs. 5,78,420

MEDICAL RESEARCH.

(Provinces).

Non-recurring Expenditure—

		Rs.
1st five years	..	20,00,000
2nd five years	..	*20,00,000*
1st ten years	..	*40,00,000*

Maintenance charges at 3 p. c. per year on the above expenditure—

1st five years $\frac{10 \times 20,00,000 \times 3}{5 \times 100}$ = 1,20,000

2nd five years $\frac{20,00,000 \times 3 \times 5}{100} + \frac{20,00,000 \times 3 \times 10}{5 \times 100}$

= 3,00,000+1,20,000

= 4,20,000

1st ten years .. .. 4,20,000+1,20,000 = 5,40,000

RECURRING EXPENDITURE ON MEDICAL RESEARCH.

(General Provision).

1st five years at Rs. 10 lakhs per year	=	50,00,000
2nd five years	=	*50,00,000*
1st ten years	=	*1,00,00,000*

Health education at Rs. 3 lakhs per year—

Five years	Rs. 15 lahhs.
Ten years	Rs. 30 lakhs.

Special provision for industrial health services—

Five years	Rs. 75 lakhs.
Ten years	Rs. 175 lakhs.

Maintenance charges on capital works in connection with certain services at 3 p. c. per annum.

	1st five years. Rs.	1st ten years. Rs.
3 million unit	7,03,64,070	23,62,74,432
Malaria	8,808	38,028
	46,200	2,21,100
School health	7,920	27,720
Tuberculosis	14,54,100	63,75,450
Mental diseases	10,02,000	38,37,000
Leprosy	30,000	1,05,000
	8,40,000	37,80,000
Nutrition	36,300	1,27,050
Total ..	7, 37,89,398	25,07,85,780

APPENDIX 56.

Press Communique, dated the 18th October 1943, announcing the appointment of the Health Survey and Development Committee.

In connection with post-war reconstruction plans the Government of India have appointed a committee, to be known as the Health Survey and Development Committee, to make a broad survey of the present position in regard to health conditions and health organisation in British India and to make recommendations for future development.

A drive to improve health conditions must necessarily be n the forefront of any programme directed towards improving the standard of living in the post-war period. If dissipation of financial resources and administrative effort is to be avoided, plans for the improvement of health organisation must be based on a comprehensive review of the health problem as a whole which will take account of, and place in their proper perspective, all the various factors affecting the health of the community with which health administration is concerned. The Government of India believe that a broad survey of the whole health field by a central committee will be of considerable assistance to Governments in preparing their post-war programmes and that the time has come when, in spite of the difficulties arising from war conditions, such a review must be undertaken.

The Committee appointed includes persons with practical experience of preventive public health work, medical relief, medical and public health education, industrial health conditions and other aspects of the health problem. The Committee will have power to appoint sub-committees to make preliminary inquiries into particular aspects of the problem. The procedure of the Committee will necessarily have to be adapted to war conditions and it will not be possible for the Committee as a whole to make tours of inquiry but it will be open to the Committee to have local inquiries made by small groups or sub-committees when such inquiries are essential for the adequate discharge of their task.

The composition of the Committee will be as follows :—

Chairman—Sir Joseph Bhore, K. C. S. I., K. C. I. E., C. B. E.

Members—

1. Rai Bahadur Dr. A. C. Banerjea, C. I. E., M.B. B.S. (All.), D.P.H. Director of Public Health, U.P.

2. K. B. Dr. Abdul Hamid Butt, M.B.B.S. (Pb.) D.P.H. (London), D.T.M. & H. (Eng.), Director of Public Health, Punjab.

3. Dr. R. B. Chandrachud, M.B.B.S., F.R.C.S., Chief Medical Officer, Baroda State.

4. Lt.-Col. E. Cotter, C.I.E., M.B., Ch. B., D.P.H., I.M.S., Public Health Commissioner with the Government of India.

5. Dr. D. J. R. Dadabhoy, M.D., M.R.C.P. (Lond.), ex-President of the All-India Association of Medical Women, Bombay.

6. Dr. J. B. Grant, B.A., M.D., M.P.H., International Health Division of the Rockefeller Foundation, Director, All-India Institute of Hygiene and Public Health, Calcutta.

7. Dr. Mohammad Abdul Hameed, M. D., M.R.C.P., Member of the Medical Council of India, Professor of Pathology, Lucknow University.

8. Col. J. B. Hance, C.I.E., O.B.E., M.D., B. Ch. (Cam.), M.R.C.S., F.R.C.S.(Edin.), Director General, India Medical Service.

9. Sir Henry Holland, C.I.E., M.B., Ch. B., F.R.C.S. (E.), C.M.S. Hospital, Quetta.

10. Sir Frederick James, O.B.E., M.L.A., Member, Central Advisory Board of Health.

11. N. M. Joshi, Esq., M.L.A.

12. Dr. H. M. Lazarus, F.R.C.S. (Edin.), C.M.O., Women's Medical Service.

13. Pandit L. K. Maitra, M.L.A., Member, Central Advisory Board of Health.

14. Diwan Bahadur Dr. A. Lakshmanaswami Mudaliar, B.A., M.D. F.C.O.G., Vice-Chancellor, University of Madras, Member of the Medical Council of India.

15. Dr. U. B. Narayanrao, L.C.P.S. (Bomb.), Medical Practitioner, Bombay, President, All-India Medical Licentiates Association.

16. Dr. Vishwa Nath, M.A., M.D., D.P.H., D.T.M. & H., F.R.C.P., Member of the Medical Council of India, Medical Practitioner, Lahore.

17. Maj.-Gen. W. C. Paton, M.C., M.A., M.B., Ch. B. (Edin.), F.R. C.S. (Edin.), Surgeon General, Bengal.

18. B. Shiva Rao, Esq.

19. Dr. B. C. Roy, M.R.C.P., F.R.C.S., President of the Medical Council of India.

20. The Hon'ble Pandit P.N. Sapru, Member, Council of State, Member, Central Advisory Board of Health.

21. Lt.-Col. B. Z. Shah, M.R.C.S., L.R.C.P., I.M.S. (Retd.), Superintendent, Mental Hospital, Poona, formerly Director of Medical Services, Sind.

22. Mrs. Shuffi Tyabji, J.P., K.I.H., Bombay.

23. Dr. Hemandas R. Wadhwani, M. B. B.S. K.I.H., J.P., Minister, Sind.

Secretary—Rao Bahadur Dr. K.C.K.E. Raja, L.M. & S. (Mad.), L.R.C. P. & S., L.R.F.P.S. (Edin. and Glas.), D.P.H., (Camb.), and D.T.M. & H. Camb.).

APPENDIX 56.

Composition of Advisory Committees of the Health Survey and Development Committee.

(1) INDUSTRIAL HEALTH ADVISORY COMMITTEE.

The Hon'ble Mr. P. N. Sapru. (*Chairman*).
Mr. N. M. Joshi. (*Vice-Chairman*).
Lt.-General J. B. Hance.
Col. E. Cotter.
Sir Frederick James.
Dr. B. C. Roy.
Mr. B. Shiva Rao.
Dr. R. A. Amesur.
Dr. M. Ahmad. (*Member-Secretary*).

(2) MEDICAL RELIEF ADVISORY COMMITTEE.

Dr. B. C. Roy. (*Chairman*).
Sir Henry Holland (*Vice-Chairman*).
Lt.-General J.B. Hance.
Major-General W. C. Paton.
Lt.-Col. B. Z. Shah.
Dr. R. B. Chandrachud.
Dr. D. J. R. Dadabhoy.
Pandit L. K. Maitra.
Captian A. Banerji. (*Secretary*).

(3) MEDICAL RESEARCH ADVISORY COMMITTEE.

Lt.-General J. B. Hance. (*Chairman*).
Col. E. Cotter.
Dr. W. R. Aykroyd.
Pandit L. K. Maitra.
Bt.-Col. Sir Ram Nath Chopra.
Dr. Vishwa Nath.
Dr. C. G. Pandit.
Dr. V. N. Patwardhan.
Lt.-Col. H. W. Mulligan. (*Member Secretary*).

4) PROFESSIONAL EDUCATION ADVISORY COMMITTEE.

Diwan Bahadur Dr. A. L. Mudaliar. (*Chairman*).
Lt.-Col. H. M. Lazarus. (*Vice-Chairman*).
Lt.-Genral J. B. Hance.
Dr. J. B. Grant.

(4) PROFESSIONAL EDUCATION ADVISORY COMMITTEE (*contd.*)

Dr. Vishwa Nath.
Dr. B. C. Roy.
Dr. M. A. Hameed.
Dr. U. B. Narayanrao.
Dr. S. Ramakrishna (*Secretary*).

(5) PUBLIC HEALTH ADVISORY COMMITTEE.

Col. E. Cotter. (*Chairman*).
Dr. J. B. Grant. (*Vice-Chairman*).
Lt.-Col. C. A. Bozman.
Sir Frederick James.
The Hon'ble Mr. P. N. Sapru.
Rai Bahadur Dr. A. C. Banerjea.
Khan Bahadur Dr. A. H. Butt.
Dr. Hemandas R. Wadhwani.
Mrs. K. Shuffi Tyabji.
Dr. B. C. Das Gupta.
Mr. B. Shiva Rao.
Dr. K.T. Jungalwalla (*Secretary*).

APPENDIX 57.

List of written memoranda and reports considered by the Health Survey and Development Committee.

INDUSTRIAL HEALTH ADVISORY COMMITTEE.

1. Replies to the Industrial Health questionnaire by Dr. Donald Stewart, one of the leading Industrial Medical Officers in England.

2. Replies to the Industrial Health questionnaire by Dr. J. J. Heagerty, Director of Public Health Services, Canada.

Sickness Insurance.

3. A health service and sickness pay scheme for industrial workers in India by Dr. K. C. K. E. Raja and Dr. M. Ahmed.

4. A note on Prof. Adarkar's Sickness Insurance Scheme by Dr. M. Ahmed.

5. A note on the Administrative Machinery of the Industrial Health Insurance Scheme by Professor B. P. Adarkar.

6. Report on health insurance for Industrial Workers by Professor B. P. Adarkar, M. A., (Cantab.) Officer on Special duty, Labour Department, Government of India.

Miscellaneous.

7. Extract from a letter from Dr. E. R. A. Merewether, M.D., M.R.C.P., F.R.S.E., Barrister-at-Law, H. M. Senior Medical Inspector of Factories, to Sir Weldon Darlymple Champneys, Bt., D.M., F.R.C.P., Ministry of Health, Whitehall, London.

8. Scope and nature of welfare work relating to health in industry in India with special reference to Central Government undertakings by Mr. R. S. Nimbkar, Labour Welfare Adviser, Government of India.

9. Note on Industrial Health by Sir Frederick James (Points taken from the Report of the first British Industrial Health Conference, 1943).

10. Inspection note of the factories in Bengal by Sir Frederick James, O.B.E., M.L.A.

11. Copy of D. O. letter No. F. 1 (*a*)/9/44, dated the 4th January, 1944, from Mr. P.P. Pillai, International Labour Officer, Indian Branch, New Delhi, to Rao Bahadur Dr. K. C. K. E. Raja, Secretary, Health Survey & Development Committee, regarding ratification of international conventions concluded under the auspices of the League.

MEDICAL RELIEF ADVISORY COMMITTEE.

Drug Addiction.

12. Memorandum on drug addiction by Dr. B. Mukerjee, Director, Biochemical Standardization Laboratory, Calcutta.

Feldshers Training.

13. A note on " Short " and " Long term " proposals for medical relief with special reference to the Russian and Chinese systems by Lt.-General J. B. Hance, C.I.E., O.B.E., K.H.S., I.M.S., and Lt.-Col. D. P. McDonald, I.M.S.

Medical Relief in Rural Areas.

14. A note on long-term and short-term programme of a 3-million unit by Dr. B. C. Roy and Dr. J. B. Grant.

15. American College of Surgeons, Manual of Hospital Standardization History, Development and Progress of Hospital Standardization.

Mental Hygiene.

16. Memorandum on " Mental Hygiene " by Dr. K. R. Masani.

17. Memorandum on " Prevention of Mental Diseases " by Dr. K. R. Masani, Director and Psychiatrist, Indian Institute of Psychiatry and Mental Hygiene, Bombay.

18. Summary of Short-term recommendations made in the memorandum on mental hygiene and the prevention of mental diseases by Dr. K. R. Masani, Director and Psychiatrist, Indian Institute of Psychiatry and Mental Hygiene, Bombay.

19. Memorandum submitted to the Health Survey and Development Committee on " Provision for patients suffering from Mental diseases " by Dr. K. R. Masani, Director and Psychiatrist, Indian Institute of Psychiatry and Mental Hygiene, Bombay.

20. Memorandum on ' Provision for Mentally Defective (Mentally Deficiency) Patients , by Dr. K. R. Masani, Director and Psychiatrist, Indian Institute of Psychiatry and Mental Hygiene, Bombay.

21. Memorandum on the problems of Prevention and Treatment of Mental Disorders by Dr. G. Bose.

22. A brief outline of a scheme of Mental Hygiene Organisation by Lieut.-Colonel B. Z. Shah, I.M.S. (Retd.).

23. Memorandum on mental hygiene, prevention of mental diseases and provision for mental patients and mental defectives in India by Lieut.-Colonel M. Taylor, O.B.E., M.D., D.P.H., I.M.S., Medical Superintendent, European Mental Hospital, Ranchi.

24. Memorandum on the measures necessary for the prevention and treatment of mental disorders in India by Dr. M. V. Govindaswamy, M.A., B.Sc., M.B.B.S., D.P.M., Superintendent, Mysore Government Mental Hospital, Bangalore.

25. Report by Lt.-Col. M. Taylor, O.B.E., M.D., D.P.H., I.M.S., on the tour of mental hospitals in India.

Miscellaneous.

26. Note on the Post-war health policy and on the reconstruction of health services in India by Major-General J. B. Hance, I.M.S., Director General, Indian Medical Service.

27. A Health Service for India—The First Stage by Lieut.-Col. C. A. Bozman, I.M.S., Additional Public Health Commissioner with the Government of India.

28. Memorandum by the Countess of Dufferin's Fund Association regarding the part to be played by the Women's Medical Service in their post-war plans

29. Letter from Dr. (Miss) Edith Brown, Principal, Women's Christian Medical College, Ludhiana, mentioning the conditions under which women should be asked to work in the villages.

30. Trends—Medical Relief.

31. A National Medical Service (received from the All-India Institute of Hygiene and Public Health, Calcutta).

32. A National Health Service—The White Paper proposals in brief.

MEDICAL RESEARCH ADVISORY COMMITTEE.

33. A note on Medical Research in India by Lieut.-Colonel S. S. Sokhey, I.M.S.

34. The future of Medical Research in India by Dr. V. N. Patwardhan.

35. Three notes on Medical Research by Major-General Sir John Taylor, C.I.E., D.S.O., I.M.S.,

36. Memorandum on Medical Research in India by Bt.-Colonel Sir Ram Nath Chopra, C.I.E., I.M.S. (Retd.).

37. Memorandum on Medical Research in India by Dr. B. M. Das Gupta.

38. Memorandum on Medical Research in India by Dr. V. R. Khanolkar.

39. A note on Medical Research in India by Dr. C. G. Pandit.

40. Note on Medical Research in India by Dr. G. Sankaran.

41. All-India Policy and Initial Steps for Medical Research in relation to industry by Dr. J. B. Grant.

42. Notes of discussion by General Hance and Dr. C. G. Pandit with Dean C. J. Mackenzie, President, National Research Council, Canada.

ORGANISATION SUB-COMMITTEE.

43. Suggestions for the formation of Ministries of Health at the Centre and in the Provinces by Drs. K. C. K. E. Raja and John B. Grant.

44. A note on (1) methods of improving local health administration and (2) the functions of the proposed district health organisation by Dr. K. C. K. E. Raja.

45. Action taken in the province of Madras to control local bodies in order to increase the efficiency of their administration in general and with special reference to their health functions by Dr. K C. K. E. Raja.

46. A note detailing certain proposals under consideration by the Sind Government improving the health administration of local bodies by Dr. H. R. Wadhwani.

47. A note on the distribution of health functions between Departments of the Government of India (from the Department of Education, Health and Lands of the Government of India).

PROFESSIONAL EDUCATION ADVISORY COMMITTEE.

Basic Doctor.

48. A memorandum on the training of Basic Doctor in India by Dr. Vishwa Nath.

49. Some suggestions regarding the " Basic curriculum for the Basic Doctor " of the future by Major General J. B. Hance, C.I.E, O.B.E., V.H.S., I.M.S.

50. Note on Dr. Vishwa Nath's memorandum by Prof. M. A. Siddiqui, Medical College, Lahore.

51. Note on " Basic medical qualification " by Dr. B. B. Yodh.

52. Memorandum on the training of " Basic Doctor " and some problems pertaining to medical education by Dr. A. L. Mudaliar.

53. Note on the teaching of physics in a medical college by G. Sankaran.

54. A further note on medical education in India by Lieut.-Col. M. McRobert, I.M.S.

55. Note on the compression of the course in medical education by Capt. M. G. Kini.

56. A scheme for medical education proposed by Dr. V. R. Khanolkar, etc.

57. A note embodying the recommendations of the sub-committee dealing with the curriculum for the training of the basic doctor on undergraduate teaching in preventive medicine and public health by Dr. J. B. Grant and Dr. K. C. K. E. Raja.

58. " Children's diseases " syllabus of studying by Dr. G. Coelho, M.R.C.P., Physician, B. J. Hospital for Children, Bombay.

59. The position of Physiology in the basic medical curriculum by Lt.-Col. S. L. Bhatia, I.M.S..

60. Note on the syllabus for training in ear, nose and throat by Dr. C. A. Amesur, M.S. (Lond.), D.L.O. (Eng.), Bombay.

61. Summarized note on an adequate minimum of instruction in Psychiatry in the undergraduate medical curriculum submitted by Dr. K. R. Masani.

62. Suggested syllabus for medical education by the members of the curriculum committee from Bombay.

Dental Education.

63. Memorandum on Dental Education and provision of Dental Services in India, submitted by the Dental Sub-committee consisting of Dr. C. D. Marshall Day, Dr. R. Ahmad and Dr. V. M. Desai.

64. Supplementary memorandum submitted by the Sub-committee on Dental Education consisting of Dr. C. D. Marshall Day and Dr. V. M. Desai.

65. Note on Dental Hygienists by Dr. R. Ahmad, Principal, The Calcutta Dental College and Hospital, Calcutta.

66. Memorandum on Dental Education and Progress in India by Dr. R. Ahmad, Principal, The Calcutta Dental College and Hospital, Calcutta.

67. Memorandum on the development of Dental Education in India by Dr. V. M. Desai, D.D.S., F.I.C.D., Dean, the Nair Hospital Dental College, Bombay.

68. Memorandum regarding the urgent need for the extension and improvement of dental education in India and the provision of adequate facilities for dental service by Dr. C. D. Marshall Day, Ph.D., D.M.D., M.S., B.D.S., F.I.C.D., Dean of the Faculty of Dentistry, Punjab University, Lahore.

Medium of Instruction.

69. Medium of instructions in medical schools and colleges in India by Dr. M. Abdul Hamid.

70. A note on the medium of instruction in medical schools and colleges by the Principal, Osmania College, Hyderabad.

Nursing.

71. Proceedings of a conference of representatives of nursing profession in India held in New Delhi on 28th, 29th February and 1st March, 1944.

72. A note on the position of nursing conditions in India by Miss E.E. Hutchings, Miss A. Wilkinson and Miss M. Craig.

73. A note by the Sub-committee consisting of Miss E. E. Hutchings, Miss A. Wilkinson and Miss M. Craig on the cost of implementing certain recommendations made in their note on the position of nursing conditions in India.

74. A note on the training of midwives at the Government Hospital for women and children, Madras, by Lieut.-Colonel H. M. Lazarus.

75. Suggested syllabus for a course in institutional and domiciliary midwifery for those students who are not taking the full general nursing course of three years by Miss Hutchings, Miss Wilkinson and Miss M. Craig.

76. Notes by Miss Hutchings, Miss Craig and Miss Wilkinson on the proposed budget for the first year of the short-term programme and for the long-term programme.

Pathology.

77. Note on the facilities available in India for the training of Pathologists by Dr. V. R. Khanolkar.

Pharmacy.

78. Memorandum on " Pharmaceutical Education " by Dr. B. Mukerji, M.D., D.Sc., F.N.I., F.A.Ph.S., Offg. Director, Bichemical Standardization Laboratory, Calcutta.

79. Memorandum on the training needed for the profession of pharmacy in India by J. C. David, M.B., Ph.D.

80. Pharmacy Training in India by Dr. Khem Singh Greval.

81. Letter dated 30th December, 1943, from Prof. N. K. Basu, Department of Pharmacy, Benares Hindu University, Benares.

82. Suggested syllabus for the degree course in Pharmacy (B. Pharm.) by Dr. B. Mukerji.

83. Suggested syllabus for the diploma course in Pharmacy by Dr. B. Mukerji.

84. Proposed composition of the Central Pharmaceutical Council (on the lines of the Indian Medical Council) by Dr. B. Mukerji.

85. Joint Memorandum on Pharmaceutical Education submitted by Dr. B. Mukerji, M. D., D.Sc., F.N. I., Director, Bio-chemical Standardization Laboratory, Calcutta.

Post-graduate Training.

86. A note on Post-Graduate Medical Education by Dr. A. L. Mudaliar, M.D., F.R.C.O.G., F.A.A.C.S.

87. Graduate and Post-graduate Medical Education.

Registration.

88. Note by Dewan Bahadur Dr. A. L. Mudaliar regarding medical registration on an All-India basis.

Hospital Social Workers.

89. Training of hospital social workers (Almoners).

90. Training of hospital social workers and demonstration in a Bombay Hospital by Dr. J. M. Kumarappa.

91. Note on Hospital Social Workers by Dr. J. B. Grant, C.B.E., Director, All-India Institute of Hygiene and Public Health, Calcutta.

92. A note on adequate training for medical social work by Dr. K. R. Masani, Director, Child Guidance Clinic of the Sir D. J. Tata Graduate School of Social Work, Bombay.

Teaching in Pediatrics.

93. A note on Undergraduate teaching in Pediatrics by Dr. J. M. Orkney, W.M.S., Professor of Maternity and Child Welfare, All-India Institute of Hygiene and Public Health, Calcutta.

94. A note on Post-graduate teaching in pediatrics by Dr. J. M. Orkney, W.M.S., Professor of Maternity & Child Welfare, All-India Institute of Hygiene and Public Health, Calcutta.

Technicians.

95. Proposals for the future training of the Laboratory Assistants and Radiographers by Dr. Mohd. Abdul Hameed, M.D., M.R.C.P, (Lond.), Professor of Pathology, King George's Medical College, Lucknow.

96. A further note on the training of laboratory technicians by Dr. M.A., Hameed, M.D., M.R.C.P. (Lond.), Professor of Pathology, King George's Medical College, Lucknow.

97. Training of Medical Technologists (received from the All-Indi Institute of Hygiene and Public Health, Calcutta.

98. Trends—Ancillary Medical Personnel.

Training of Internees.

99. The minimum conditions to be fulfilled by a hospital approved for training internees by Dr. V. R. Khanolkar, Tata Memorial Hospital, Bombay.

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New Delhi, 18th December, 1945.

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REPORT

OF THE

HEALTH SURVEY AND DEVELOPMENT COMMITTEE

Vol. IV

Summary

PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI,
PRINTED BY THE MANAGER GOVERNMENT OF INDIA PRESS, NEW DELHI,
1946
Price annas 6 or 7d.

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FOREWORD

In this foreword an attempt is made to present, in a nutshell, the main principles underlying the Committee's proposals for future health development in the country. These are:—

1. No individual should fail to secure adequate medical care because of inability to pay for it.

2. In view of the complexity of modern medical practice, the health services should provide, when fully developed, all the consultant, laboratory and institutional facilities necessary for proper diagnosis and treatment.

3. The health programme must, from the beginning, lay special emphasis on preventive work. The creation and maintenance of as healthy an environment as possible in the homes of the people as well as in all places where they congregate for work, amusement or recreation, are essential. So long as environmental hygiene is neglected, so long as the faulty modes of life of the individual and of the community remain uncorrected, so long as these and other factors weakening man's power of resistance and increasing his susceptibility to disease are allowed to operate unchecked, so long will our towns and villages continue to be factories for the supply of cases to our hospitals and dispensaries.

4. The need is urgent for providing as much medical relief and preventive health care as possible to the vast rural population of the country. The debt which India owes to the tiller of the soil is immense and, although he pays the heaviest toll when famine and pestilence sweep through the land, the medical attention he receives is of the most meagre description. The time has therefore come to redress the neglect which has hitherto been the lot of the rural areas.

5. The health services should be placed as close to the people as possible in order to ensure the maximum benefit to the communities to be served. The unit of health administration should therefore be made as small as is compatible with practical considerations.

6. It is essential to secure the active co-operation of the people in the development of the health programme. The idea must be inculcated that, ultimately, the health of the individual is his own responsibility and, in attempting to do so, the most effective means would seem to be to stimulate his health consciousness by providing health education on the widest possible basis as well as opportunities for his active participation in the local health programme.

7. We consider it essential for the success of the scheme that its development should be entrusted to Ministers of Health who enjoy the confidence of the people and are able to secure their co-operation. Both in respect of legislation and of administration it is likely that some of the measures to be undertaken may offend existing social and religious practices, while others may involve control over the day to day life of the citizen. We therefore feel that it is only a Minister enjoying the confidence of the people who can carry such enactments through the legislature and ensure their practical application in the country.

In putting forward its proposals for a national health organisation, which incorporates these principles, the Committee has drawn up a long-term programme which, if implemented on the lines suggested,

should help to provide the people with a reasonably well developed service based on the newer and expanding conceptions of modern health practice. The attainment of this objective, which may take about 40 years, is to be achieved through successive stages of intensive effort directed towards the production of the necessary trained personnel and the creation and development of the organisations and institutions which will form essential parts of the community's health service. The Committee has attempted to outline, in some detail, the first and second five-yearly stages of such development and has also suggested certain objectives to be kept in view for the next five years, leaving subsequent developments to be shaped in the light of the circumstances existing at the time.

The doctor of the future should be a "social physician protecting the people and guiding them to a healthier and happier life". He should place prevention of disease in the forefront of his programme and should so combine remedial and preventive measures as to confer the maximum benefit on the community. The Committee's proposals for the training of the 'basic' doctor, the term applied to the medical graduate of the future, are designed to equip him for all such duties.

The active support of the people is sought to be secured through the establishment of Health Committees in every village and through the stimulation of local effort for the improvement of environmental sanitation, control of infectious diseases and other purposes. A wide programme of health education, covering all sections of the population, is also proposed for promoting the growth of such public support.

REPORT OF THE HEALTH SURVEY AND DEVELOPMENT COMMITTEE

VOLUME IV

A SUMMARY OF THE REPORT

INTRODUCTION

1. Our survey of existing health conditions in India in volume 1 of the report extends to about 220 pages, while the recommendations for the creation of a better standard of national health through the development of an organised health service on modern lines are embodied in a second volume of over 500 pages. In these two volumes we have dealt, at some length, with India's health problems in order to present an adequate picture of the existing state of affairs and of the proposals for its improvement. In addition to such detailed consideration of matters relating to India's present and future health administration we feel that it may be of advantage to give, in a much smaller compass, the salient features of our report in the present volume. In this summary we have not strictly adhered to the chronological order of the chapters in the first two volumes of our report. It deals with different subjects such as personal health services, environmental hygiene, professional education, medical research and so on in separate sections and indicates briefly, in each section, the more important matters relating to the subject concerned, in respect of both the existing conditions and of our proposals for their improvement.

THE STATE OF THE PUBLIC HEALTH IN BRITISH INDIA

2. In presenting a picture of health conditions in India we have confined ourselves to the period ending with 1941 in order to exclude the adverse effects of abnormal conditions arising out of the War, particularly after Japan's entry towards the end of that year. The present state of the public health in British India is low as is evidenced by the wide prevalence of disease and the consequent high rates of mortality in the community as a whole and, in particular, among such vulnerable groups as children and women in the reproductive age period. The death rate for the general population in British India was, in 1937, 22·4 per 1,000 inhabitants and for infants (children under one year of age) 162 per 1,000 live births. In 1941 the corresponding rates were 21·8 and 158 respectively. As a contrast the following figures for New Zealand and Australia are quoted:—

	General death rate (1937)	*Infantile mortality rate (1937)*
New Zealand	9·1	31
Australia	9·4	38

The high rates of mortality in the community at all age periods are reflected in the very low expectation of life in India. We give below the expectations of life for new-born infants in New Zealand, Australia and British India.

	Expectation of life at birth	
	Males	Females
New Zealand . . .	65·04	67·88 (1931)
Australia	63·48	67·14 (1932-34)
British India . . .	26·91	26·56 (1921-30)

New Zealand and Australia are two of the most healthy countries in the world and the figures quoted above give an indication of what has already been achieved in reducing mortality in the community and in prolonging the life of the individual in those countries. India has to go a long way before the health of the people is raised to the standards already reached by the other countries. In all countries in which health administration has made definite progress the expectation of life for females is higher than for males. India is an exception the reason being, as will be shown later, the high rate of mortality among women in this country due to causes associated with pregnancy and childbearing.

3. The rates of mortality among infants and children and among mothers are examined below in greater detail.

Deaths among infants and children under 10 years of age in British India and in England and Wales are shown below as percentages of the total deaths at all ages in the two countries.

Deaths at specific age-periods shown as percentages of the total deaths at all ages

	Under one year	1—5 years	5—10 years	Total under 10 years
British India (average for 1935-39).	24·3	18·7	5·5	48·5
England and Wales (1938) . .	6·8	2·1	1·1	10·0

In India, nearly half the total deaths are among children under 10 years of age and, of the mortality in this age group, one half takes place within the first year of life. The percentage for England and Wales in every age group is very much smaller.

Maternal Mortality

4. About 200,000 women die every year in British India from causes associated with pregnancy and childbearing and, probably, about four millions suffer from varying degrees of disability and discomfort as a result of the same causes.

The Incidence of Diseases

5. At least 100 million persons suffer from malaria every year, and the annual mortality for which the disease is responsible, either direct-

ly or indirectly, is about 2 millions. About 2·5 million active cases of tuberculosis exist in the country and 500,000 deaths take place each year from this cause alone. The common infectious diseases, namely, cholera, smallpox and plague, are also responsible for a large amount of morbidity and mortality, the extent of which varies from year to year. Among the different countries of the world for which statistics are available, India ranks high as one of the largest reservoirs of infection in respect of all the three. These and the other two are all preventible diseases and their incidence should have been brought under effective control long ago. In addition, endemic diseases such as leprosy, filariasis, guinea-worm and hook-worm diseases are responsible for a considerable amount of morbidity in the country, although their contribution to mortality is relatively small.

Causes of the Low Level of Health in India.

6. The maintenance of the public health requires the fulfilment of certain fundamental conditions, which include the provision of an environment conducive to healthful living, adequate nutrition, the availability of health protection to all members of the community, irrespective of their ability to pay for it, and the active co-operation of the people in the maintenance of their own health. The large amount of preventible suffering and mortality in the country is mainly the result of an inadequacy of provision in respect of these fundamental factors. Environmental sanitation is at a low level in most parts of the country, malnutrition and under-nutrition reduce the vitality and power of resistance of an appreciable section of the population and the existing health services are altogether inadequate to meet the needs of the people, while lack of general education and health education add materially to the difficulty of overcoming the indifference and apathy with which the people tolerate the insanitary conditions around them and the large amount of sickness that prevails.

7. Diet surveys carried out in different parts of the country have shown, in typical urban and rural groups, that the food consumed is insufficient to provide the necessary energy requirements in the case of some 30 per cent. of the families, that the diet is almost invariably ill-balanced and that there is, in terms of food factors, a deficiency of fats, vitamins and proteins of high biological value. The statistics for food production in India show a considerable margin of error, but such figures as are available suggest that, in regard to cereals which form the staple article of diet, the deficiency may be of the order of 22 per cent. of the country's requirements. For other articles such as vegetables, fruits, milk, meat, fish and eggs, the quantities now produced will have to be increased several times before adequate amounts will become available for the proper nutrition of the people.

8. While the extent of provision of hospitals and dispensaries in urban and rural areas varies considerably among the provinces, the rural population has everywhere been less adequately provided for than the urban. The inhabitants of the rural areas live more widely dispersed than those of the urban and the medical aid given by an institution becomes to that extent more restricted. In the United Provinces, for instance, one institution serves in the rural areas an average population of 105,626 distributed over an average number of 224 villages.

9. The quality of service rendered by these institutions leaves much to be desired. For instance, the average time given to a patient was noted, during our tours, to be 48 seconds in one dispensary and about a minute in another. The medical service given to the people under such conditions is bound to be of a perfunctory nature. The medical officers in charge of many dispensaries have, for long periods, been out of touch with modern medical practice without an opportunity to work in a well conducted hospital. Other defects include unsatisfactory conditions in regard to the design of, and accommodation in, institutions, considerable overcrowding in the wards and great insufficiency of the nursing staff.

10. The number of beds available in British India for the treatment of general and special diseases is about 73,000 or about 0·24 bed per thousand population, as against 7·14 in England and Wales and 10·48 in the United States.

Inadequacy of Health Personnel

11. Some idea of the magnitude of the task to be accomplished in increasing, within the next 25 years, trained personnel of various type in order to provide a reasonably satisfactory health service to the people may be obtained from the following figures. We have given existing standards in the United Kingdom but have suggested for India lower ratios as the targets to be aimed at during the next quarter of a century. The reason is that the available numbers in the various categories of personnel are so small that even the attainment of the suggested ratios by 1971 will involve concerted, intensive and unremitting effort, on an unprecedented scale, by the authorities concerned.

Class of personnel	Number available now	Ratio of numbers in column 2 to the present population of British India (300 millions)	Existing ratio in the United Kingdom	Suggested ratio to be attained in 1971 in British India with an estimated population of 370 millions	Number required in 1971
1	2	3	4	5	6
Doctors . .	47,500	1 to 6,000	1 to 1,000	1 to 2,000	185,000
Nurses . .	7,000	1 to 43,000	1 to 300	1 to 300	740,000
Health Visitors	750	1 to 400,000	1 to 4,770*	1 to 5,000	74,000
Midwives . .	5,000	1 to 60,000	1 to 618†	1 per 100 births.	100,000
Qualified Pharmacists.	75	1 to 4,000,000	1 pharmacist to 3 doctors.	1 pharmacist to 3 doctors.	62,000
Qualified Dentists.	1,000	1 to 300,000	1 to 2,700	1 to 4,000	92,500

*Based on 1935 figure.
†Based on 1943 figure.

RECOMMENDATIONS

12. We have indicated above certain dark shadows in the health picture of the country. If it were possible to evaluate, with any degree of exactness, the loss India suffers annually through avoidable waste of human material and the lowering of human efficiency through malnutrition and preventible morbidity, the result would be so startling as to arouse the whole country and create and enlist an awakened public opinion in support of the war against disease. According to one authority the minimum estimate of the loss to India every year from malaria alone lies somewhere between 147 and 187 crores of rupees. A nation's health is perhaps the most potent single factor in determining the character and extent of its development and progress and any expenditure of money and effort on improving the national health is a gilt-edged investment yielding immediate and steady returns in increased productive capacity.

13. In drawing up a health plan certain primary conditions essential for healthful living must in the first place be ensured. Suitable housing, sanitary surroundings and a safe drinking-water supply are pre-requisities of a healthy life. The provision of adequate health protection to all covering both its curative and preventive aspects, irrespective of their ability to pay for it, the improvement of nutritional standards qualitatively and quantitatively, the elimination of unemployment, the provision of a living wage for all workers and improvement in agricultural and industrial production and in means of communication, particularly in the rural areas, are all facets of a single problem and call for urgent attention. Nor can man live by bread alone. A vigorous and healthy community life in its many aspects must be suitably catered for. Recreation, mental and physical, plays a large part in building up the conditions favourable to sound individual and community health and must receive serious consideration. Further, no lasting improvement of the public health can be achieved without arousing the living interest and enlisting the practical co-operation of the people themselves.

MODERN TRENDS IN THE ORGANISATION OF A NATIONAL HEALTH SERVICE

14. A study of the tendencies apparent in some of the more progressive countries of the world in the development of organised health services for the community has been of great assistance to us. Broadly speaking, the modern trend is towards the provision by the State of as complete a health service as possible and the inclusion, within its scope, of the largest possible proportion of the community. The need for ensuring the distribution of medical benefits to all, irrespective of their ability to pay, has also been recognised. The general tendency appears to be towards basing the national health plan on a system of social insurance. Even in Soviet Russia, where medical care is free to all, the cost of the services is partly met from insurance funds, contributions towards these funds being made not by individual workers but by the factories and other institutions in which they work. We have come to the conclusion that, under the conditions existing in the country, medical service should be free to all without distinction and that the contribution from those who can afford to pay should be through the channel of general and local taxation. It will be for the Governments of the future to decide ultimately whether medical service should remain free to all classes

of the people or whether an insurance scheme would be more in accordance with the economic, social and political requirements of the country at the time.

15. Taking into consideration the need for ensuring adequate health service for the vast rural population of the country and the difficulty experienced in the past in attracting medical practitioners to the countryside, we have come to the conclusion that the most satisfactory method of meeting the situation would be to provide a whole-time salaried service, which would enable Governments to ensure that doctors are made available where their services are most needed. This conclusion is supported by the evidence of a number of representatives of medical associations, of private individuals and several medical administrators.

16. We have also come to the conclusion that the wholetime salaried doctors employed by the State should be prohibited private practice. In our scheme the same doctor will combine in himself, at the periphery, curative and preventive health functions and it seems almost certain that, without the prohibition of private practice, his preventive duties will not receive the attention they require. As regards medical relief, there was a general agreement among those whom we interviewed that prohibition of private practice was essential in order to ensure that the poor man in the rural areas received equal attention with his richer neighbour. We have therefore recommended the prohibition of private practice to the full-time salaried doctors employed by the State and have, at the same time, suggested scales of pay which, we believe, will provide reasonably adequate remuneration for the services they render.

17. The utilisation of the services of suitable medical men outside the health service on a part-time or even on an honorary basis will also be advantageous and even necessary, particularly in the earlier stages of our health programme. In the cities and some of the larger towns in the country, general practitioners with high qualifications and specialists are available for such employment.

The Health Programme

18. We have drawn up our health plan in two parts, one a comprehensive programme for the somewhat distant future and the other a short-term scheme covering two five-year periods. We have taken the countryside as the focal point of our main recommendations, for the debt which India owes to the tiller of the soil is immense. When pestilence and famine sweep through the land, it is he who pays the heaviest toll and yet receives only the scantiest medical assistance. Further, nearly 90 per cent. of the people in India live in the rural areas and the basic problem before the country is the provision of adequate health protection to this preponderatingly large section of the community. We have therefore made the villager the chief beneficiary under our proposals.

19. We shall first refer briefly to our proposals under the long-term programme and then set out those which are recommended for each of the two five-year periods, which constitute the short-term programme In doing so we shall take up first the district health organisation in respect of each programme. The machinery for the organisation and administration of the health services at

the Centre and in the Provinces constitutes an integral part of both the long and short-term proposals and it will be described later.

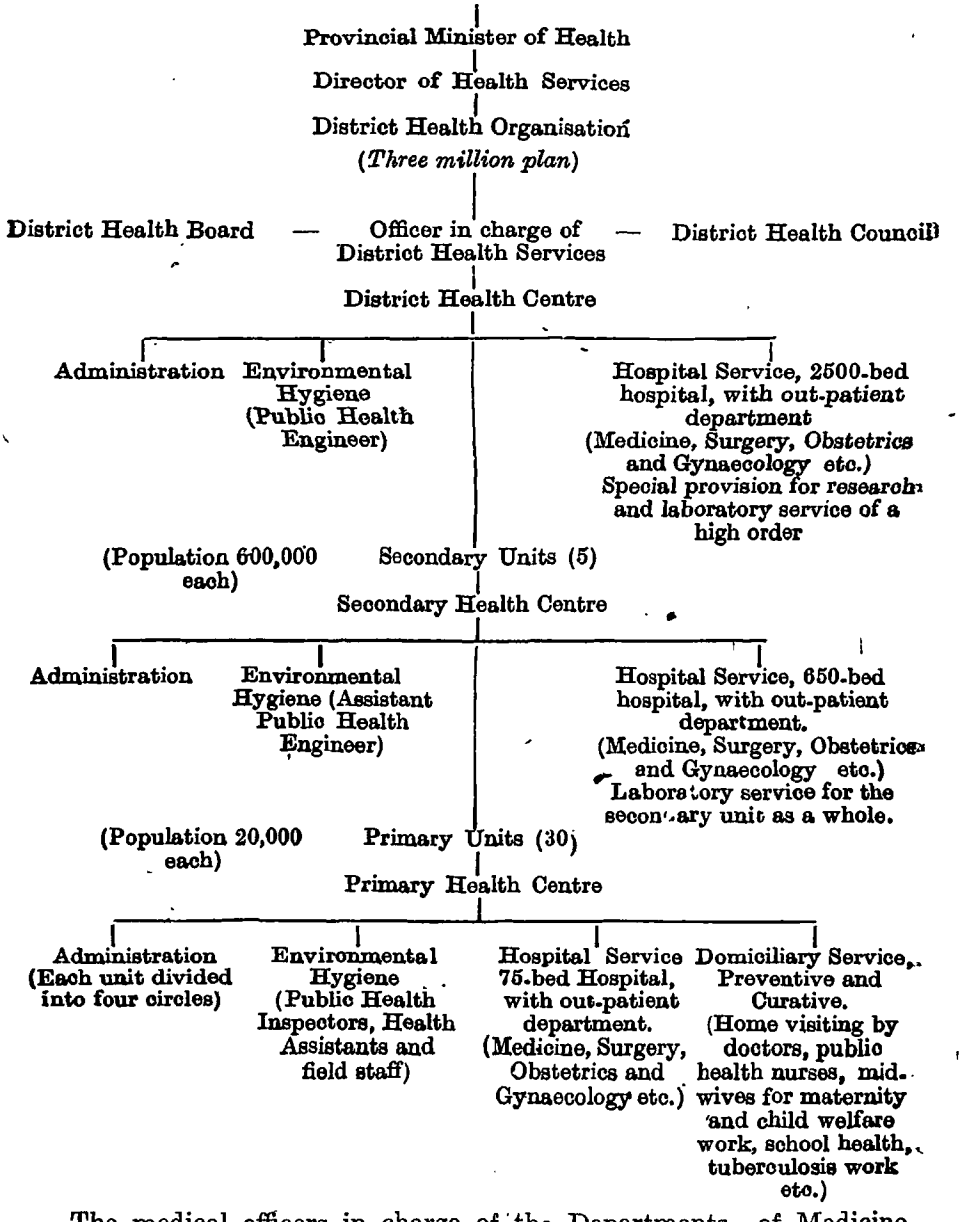
THE LONG-TERM PROGRAMME

20. The large variations that exist in the density of population in different parts of the country make it impossible to formulate a plan which can be applied without modification over all the provinces. The desirability of associating the activities of the proposed health organisation with those of other Departments of Government such as Agriculture, Education, Animal Husbandry and Co-operation has been recognised and it is therefore considered advantageous that, as far as possible, the administrative district should be chosen as the area for the development of the scheme. The populations of individual districts vary considerably from over five millions to a few hundreds of thousands or even less in some cases and therefore, in presenting the plan, an arbitrary figure of three millions for a district has been chosen. For the sake of convenience it will be referred to as the three million plan. In implementing the proposals the details that are given will have to be modified in the provinces so as to suit the size and population of their individual districts.

The Three Million Plan

21. The district health organisation will have as its smallest unit of administration the primary unit, which will normally serve an area with a population of about 10,000 to 20,000. A number of such primary units (about 15 to 25) will together constitute a secondary unit and a varying number of the latter (about 3 to 5) will form the district health unit, the designation by which the district health organisation will be known. At each of the headquarters of the district, secondary and primary units will be established a Health Centre as a focal point from which the different types of health activity will radiate into the territory covered by each type of unit. The District Health Centre will possess general and special hospitals with a total bed strength of about 2,500 and all the consultant and laboratory services required for the diagnosis and treatment of disease on up-to-date lines. The administrative staff of the district health organisation will be located here and will exercise supervision over the district as a whole. Similarly, the Secondary Health Centre will be provided with hospital accommodation of about 650 beds and with equipment and other facilities on a generous scale, although not up to the standard of the District Health Centre. The administrative staff of the secondary unit will be attached to the Secondary Health Centre and will exercise supervision and control over the primary units included in it. The Primary Health Centre will have a 75-bed hospital and health administration over the area included in the primary unit will radiate from this Centre.

22. The district health organisation described above and its functions are shown below in diagrammatic form:—


LONG-TERM PROGRAMME
Provincial Minister of Health
Director of Health Services
District Health Organisation
(Three million plan)
District Health Board
Officer in charge of District Health Services
District Health Council
District Health Centre
Administration
Environmental Hygiene (Public Health Engineer)
Hospital Service, 2500-bed hospital, with out-patient department (Medicine, Surgery, Obstetrics and Gynaecology etc.) Special provision for research and laboratory service of a high order
(Population 600,000 each)
Secondary Units (5)
Secondary Health Centre
Administration
Environmental Hygiene (Assistant Public Health Engineer)
Hospital Service, 650-bed hospital, with out-patient department. (Medicine, Surgery, Obstetrics and Gynaecology etc.) Laboratory service for the secondary unit as a whole.
(Population 20,000 each)
Primary Units (30)
Primary Health Centre
Administration (Each unit divided into four circles)
Environmental Hygiene (Public Health Inspectors, Health Assistants and field staff)
Hospital Service 75-bed Hospital, with out-patient department. (Medicine, Surgery, Obstetrics and Gynaecology etc.)
Domiciliary Service, Preventive and Curative. (Home visiting by doctors, public health nurses, midwives for maternity and child welfare work, school health, tuberculosis work etc.)

The medical officers in charge of the Departments of Medicine, Surgery etc. in the hospital at the Secondary Health Centre will, in addition to their hospital duties, supervise work in their respective fields in the hospitals in the primary units and the corresponding staff in the hospital at the district headquarters will similarly supervise the work of the different departments in the secondary and primary health centre hospitals. Close and continuous guidance through advice and supervision, which should extend even to the remote villages, is fundamental to the success of the scheme and the administrative staff at the District and Secondary Health Centres will carry out this task in the different fields of health administration.

The Primary Unit

23. Each primary unit will have six medical officers, six public health nurses and a 75-bed hospital with the requisite nursing staff, and all these should be utilised for organising a combined curative and preventive health service in the area. Over and above the hospital nursing staff there are provided six public health nurses, who should be qualified nurses with training in midwifery and, in addition, in rural health work in its preventive and remedial aspects. Of these, four may be put on to preventive work in the homes of the people. Each nurse so engaged should be able to deal with the health of school children, the welfare of mothers and children, tuberculosis work and other activities in the houses within her area of jurisdiction. The remaining two public health nurses and two medical officers will be available for organising and carrying out curative treatment in the homes of the people.

The Secondary Unit

24. The staff employed in a secondary unit will be considerably larger than that of a primary unit. The Administrative Officer at the headquarters of the secondary unit will be responsible for the supervision and co-ordination of all curative and preventive health work in the whole area supervised by the secondary unit. There will be whole-time heads of the different departments of medicine, surgery, maternity, tuberculosis and pathology at the secondary unit hospital and they will perform the dual function of attending to the duties of their respective sections in the hospital and of inspecting periodically similar work carried on in the primary unit hospitals.

25. In addition to these, the secondary unit provides for two senior public health nurses and two senior sanitary inspectors who will be responsible for supervising the work of the corresponding officers in primary units. There is also an Assistant Public Health Engineer for supervising all activities in connection with environmental hygiene throughout the area controlled by the secondary unit.

The District Headquarters Organisation

26. The provision for medical relief at the district headquarters is on a much larger scale than at a secondary unit. The number of beds in the hospital is 2,500 and the numbers of medical officers and other personnel employed are considerably greater than in a secondary unit. The provision of 2,500 beds need not necessarily be made in one large institution. These beds include provision for medical, surgical, obstetrical and gynaecological cases as well as for patients suffering from infectious diseases, mental diseases, tuberculosis and others. A number of institutions can be grouped together conveniently in the same area in order to provide the required facilities.

27. The secondary unit and district headquarters hospitals, with their better equipment and superior type of medical personnel, will be the institutions to which the more complicated cases admitted in the primary unit hospitals will be removed. The provision of ambulances and telephone connection between all the three types of hospitals are essential for ensuring that these institutions are utilised to the largest possible extent.

28. At all the three types of hospitals (primary unit, secondary unit and district headquarters hospitals) social workers are to be

employed. Their functions include, among other things, the visiting of the home of the patient in order to ascertain the causes underlying the disability for which he or she has sought the aid of the hospital and service as a connecting link between the hospital and the public in the treatment of the individual patient and the general health programme of the area concerned. Under our programme the treatment of disease has been approached not merely from the standpoint of affording the patient immediate relief but also from that of attempting to remove the causes which are responsible for his condition.

29. The health organisation briefly described above is expected to produce a reasonably satisfactory service for rural and urban communities alike. It is based mainly on a system of hospitals of varying size and of differing technical efficiency. These institutions will play the dual role of providing medical relief and of taking an active part in the preventive campaign. Work in connection with maternity and child welfare, tuberculosis, leprosy, etc., will be carried into the homes of the people from the hospitals, the outdoor organisations in respect of each of them being closely related to these institutions. The diagnostic facilities that the large hospitals will provide will also contribute their share to the preventive campaign. The social workers attached to these institutions will help to provide that preventive bias to the treatment of individual patients, in the absence of which the medical care bestowed on them may fail to produce lasting results.

30. By the time the long-term programme is completed the hospital accommodation available in the country will have risen from the present figure of about 0·24 bed per 1,000 of the population to 5·67 beds per 1,000. As regards health personnel, the numbers that will be required under certain categories and those now available are shown below:—

	Numbers required for the complete programme	Numbers now available
Doctors	233,630	47,500
Nurses (including public health nurses) .	670,000	7,500 (including existing health visitors).
Midwives	112,500	5,000
Pharmacists	77,880	75

Is such a large increase in the numbers of the health personnel possible? An example of an unparalleled expansion of health personnel is furnished by Russia. In 1913 there were altogether 19,785 doctors in that country. By 1941 the number had risen to 141,600, an increase of seven times within a period of 28 years. In India the increase required under these proposals is only about five times the existing number of doctors, to be achieved in a longer period.

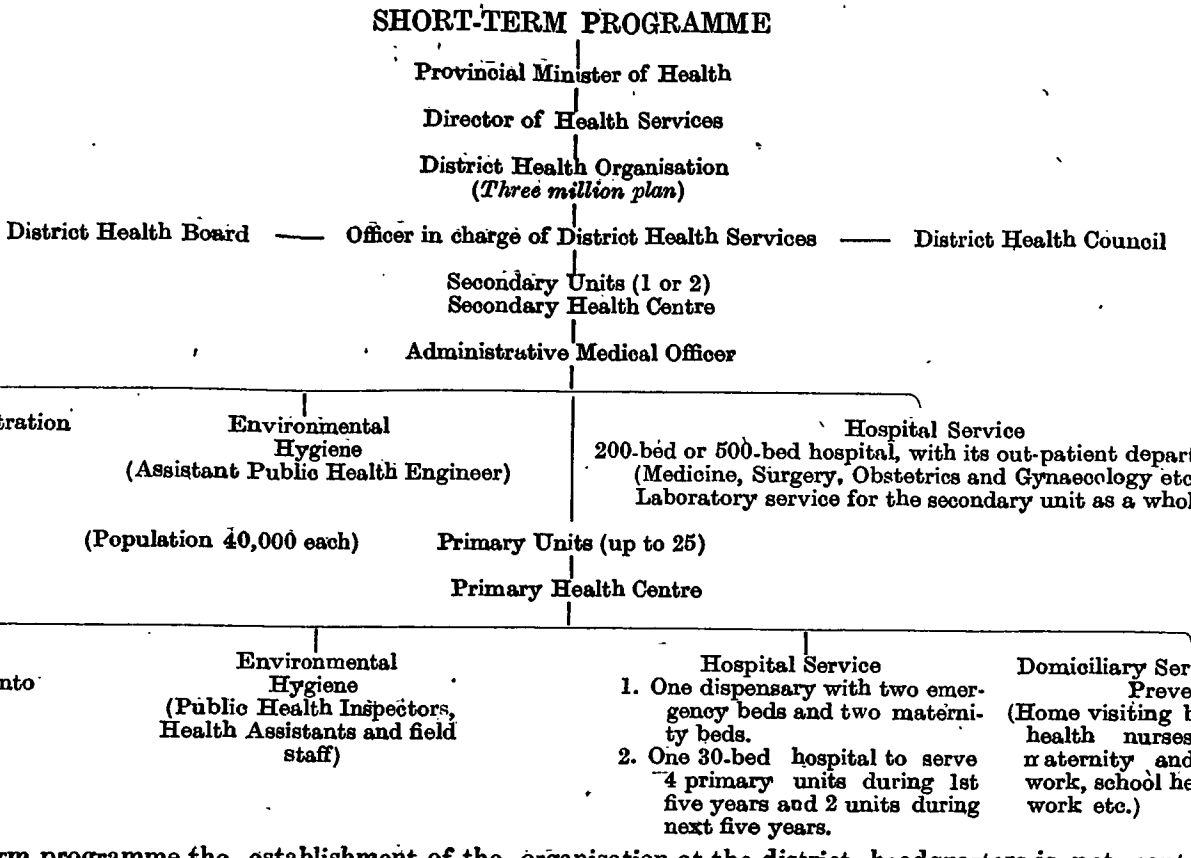
THE SHORT-TERM PROGRAMME

31. Our short-term proposals, which are intended to supplement and not supplant the existing health services, do no more than present a general picture for the guidance of the Provinces. They constitute, in our view, the irreducible minimum if tangible results are to be produced. The plan includes proposals for the establishment of personal and impersonal health services. Under the former head we propose a province-wide organisation for combined preventive and curative health work. This will provide, for each district, (1) a number of primary and secondary units, which are included in the district health unit and (2) special health services for mothers and children, school children and industrial workers as well as for dealing with the more important diseases prevalent in India, such as malaria, tuberculosis, venereal diseases, leprosy, mental diseases, and some others. The three important subjects of nutrition, physical education and health education have been dealt with in separate chapters in volume II of our report. Our recommendations regarding impersonal health services relate to town and village planning, housing, water supply, drainage and other matters regarding general sanitation. Specific proposals for the training of doctors, nurses and other categories of health personnel, for medical research and certain other important matters have also been made.

The Province-wide Health Organisation

32. While the outlines of the general plan of the district health organisation will follow those indicated for the long-term programme the plan will be less elaborate. We suggest that, in view of the insufficiency of funds and of trained personnel, each primary unit should cover, during the first ten years, a population of 40,000, that the primary health centre should have a dispensary with two beds for maternity and two for emergency cases instead of a hospital and that the secondary health centre should start with a 200-bed hospital to be raised, by the tenth year, to 500 beds. We also suggest that the establishment of the district health centre may be postponed till after this period. The staffing and equipment of the health centres at the headquarters of the primary and secondary units will be on a reduced scale. In order to expand the existing meagre hospital facilities in rural areas we also suggest that a 30-bed hospital should be established, at the start to serve four primary units, and that, by the end of the first ten years, their number should be doubled so that one such hospital will serve two primary units

33. The district health organisation suggested for the short-term programme and its functions are given below in diagrammatic form :


SHORT-TERM PROGRAMME
Provincial Minister of Health
Director of Health Services
District Health Organisation
(Three million plan)
District Health Board
Officer in charge of District Health Services
District Health Council
Secondary Units (1 or 2)
Secondary Health Centre
Administrative Medical Officer
Administration
Environmental Hygiene
(Assistant Public Health Engineer)
Hospital Service
200-bed or 500-bed hospital, with its out-patient departmen
(Medicine, Surgery, Obstetrics and Gynaecology etc.)
Laboratory service for the secondary unit as a whole.
(Population 40,000 each)
Primary Units (up to 25)
Primary Health Centre
Administration
(Each unit divided into four circles)
Environmental Hygiene
(Public Health Inspectors, Health Assistants and field staff)
Hospital Service
1. One dispensary with two emergency beds and two maternity beds.
2. One 30-bed hospital to serve 4 primary units during 1st five years and 2 units during next five years.
Domiciliary Service, Curative and Preventive.
(Home visiting by doctors, public health nurses, midwives for maternity and child welfare work, school health, tuberculosis work etc.)

In the short-term programme the establishment of the organisation at the district headquarters is not contemplated. The administrative and supervisory functions exercised by the staff at the Secondary Health Centre will be on the lines indicated for the long-term programme.

34. The district health organisation should, from the start, be established in every district in a province. This organisation should begin with five primary units and one secondary unit and these should be gradually increased to 25 primary and two secondary units at the end of the first ten years. The following tabular statement indicates the expansion we suggest for the health organisation in a typical district:—

Expansion of the scheme in a typical district.

	First year	Fifth year	Tenth year
Number of primary units .	5	10	25
Number of dispensaries . .	5	10	25
Number of 30-bed hospitals .	1	2	13
Number of secondary units .	1	1	2
Number of 200-bed hospitals .	1	1	1
Number of 500-bed hospitals .	..	..	1

Starting with about a seventh of the average population of a district in British India the proposed health organisation will, it is expected, serve half the population of individual districts by the end of the first ten years.

The Primary Unit

35. The primary health centre at the headquarters of the primary unit will be the focal point from which will radiate the various health activities contemplated in our programme. For each unit the staff required during the short-term programme will consist of 2 medical officers, 4 public health nurses for outdoor duty, 1 nurse attached to the dispensary, 4 midwives, 4 trained *dais* (as an *interim* measure till a sufficient number of midwives becomes available), 2 sanitary inspectors, 2 health assistants, 2 clerks, 1 mistry, 15 inferior servants and 1 pharmacist. This staff, with the exception of the public health nurses, midwives and trained *dais*, should be stationed at the headquarters of the primary unit, although their duties will extend over the whole area covered by the unit. The public health nurses, midwives and trained *dais* will be located at different places so as to make their services promptly available, wherever required.

36. We consider that the health programme in India should be developed on a foundation of preventive health work and proceed in the closest association with the administration of medical relief. A reduction in the demand for curative treatment can be secured only through successful preventive work. Both the doctors in the

primary unit should therefore perform curative and preventive health duties.

37. We have placed maternity and child welfare work in the forefront of our programme. Attention has already been drawn to the large number of preventible deaths, which occurs annually among children under 10 years of age and among women in the reproductive age period as the result of causes associated with pregnancy and childbearing. The supreme importance of dealing immediately with this section of the population is therefore obvious. Further, a progressive improvement of the public health depends largely on promoting the hygienic mode of life among the people by educating them towards this end. This education should be carried out intensely among women and children in order to produce lasting results. The woman doctor, the public health nurse and the midwife can carry the message of health to the homes of the people through their numerous contacts with women and children.

38. In the beginning the country will be faced with the necessity of providing, in many directions, services manned by imperfectly trained personnel with the ability to perform only limited functions. For instance, in order to promote school health work, selected school masters with limited training in the carrying out of certain duties will have to be utilised in the place of doctors and nurses until the latter become available in sufficient numbers. These teachers will work under the close supervision of the two doctors in charge of the primary unit in order to ensure that they carry out their duties satisfactorily.

39. No permanent improvement of the public health can be achieved unless the active participation of the people in the local health programme can be secured. We have therefore suggested the establishment, in each village, of a Health Committee consisting of five to seven individuals, depending on the size and population of the village. The members of the committee, who will of course be voluntary workers, can, after suitable training, help to promote specific lines of health activity. Their local knowledge and intimate contact with the people should enable the members of the committee to influence the former to accept and actively advance the health measures which are designed to promote the public welfare. The committee members should also be able to promote local effort, without payment, towards the carrying out of many measures which would otherwise prove prohibitive in cost. We consider that the development of local effort and the promotion of a spirit of self-help in the community are as important to the success of the health programme as the specific services which the health officials will be able to place at the disposal of the people.

The Secondary Unit

40. From the very start, a secondary unit should be established in each district. The secondary health centre, which will be established at its headquarters, will help to provide a higher type of medical service than that available in primary units as well as supervision and guidance of the health activities in these units. When fully developed, a secondary unit may be expected to cover an area with an average population of about 600,000. In order to co-ordinate health administration with the activities of other departments of

Government, it will be of advantage if the area of a secondary unit can be made to correspond to that of a sub-division in the district.

Hospital Provision

41. The anticipated numbers of new institutions in the 11 Governors' Provinces at the end of the first six years and of the first ten years respectively are shown below:—

	No. of dispensaries with four beds in each	No. of 30-bed hospitals	No. of 200-bed hospitals	No. of 500-bed hospitals
End of the first six years	2,293	639	216	*Nil*
End of the ten year period.	3,905	1,990	216	139

42. In addition there will be separate hospital provision for tuberculosis, mental diseases and leprosy. The existing number of hospital beds in British India is about 73,000 and, with the proposed new provision, the total accommodation expected at the end of the first five and first ten year periods will be as follows:—

At the end of the first five years—Approximately 183,000.

At the end of the first ten years—Approximately 353,000.

This programme of hospital expansion will raise the existing ratio of bed to population in the manner shown below:—

Beds per 1,000 population

At present	End of five-year programme	End of ten-year programme
0·24	0·55	1·03

As has already been pointed out, existing provision for hospital accommodation in England and Wales is 7·14 per 1,000 of the population and in the United States 10·48 per 1,000.

Dental Service

43. It will not be possible to develop even the beginnings of a dental service during the first five years of the programme because of the total inadequacy of existing dental personnel. If our scheme of dental education should proceed satisfactorily it would be possible to organise dental service on a modest scale during the next five years. Our proposals include the establishment of dental sections in the 500 and 200 bed hospitals at the secondary health centres as well as the provision of travelling dental units for service in the rural areas. If the programme is completed on the lines envisaged by us there will be, at the end of the first ten years, 139 hospitals with 500-bed accommodation and 216 hospitals with 200 beds in each. The number of mobile dental units will be 710.

44. Reference should also be made to certain other matters which we consider to be of great importance from the point of view of ensuring the success of the health programme we have recommended. They are briefly dealt with below.

Housing Accommodation for the Health Staff

We consider the provision of housing accommodation for the health staff essential in the interests of efficiency. Every health administrator is today faced with the problem of persuading doctors to settle in the villages. The absence in the rural areas of the amenities generally available in towns, including housing and water supply, is one of the factors retarding the flow of doctors from urban to rural areas. The same tendency is noticeable, though to a smaller extent, in respect of other types of health personnel. In the circumstances we consider the provision of housing is fundamental to the success of our scheme.

Co-operation of the Health Services with other Departments of Government

The national programme of reconstruction should be develcped on a broad front and, simultaneously with the inauguration of the health scheme, the reconstruction plans of other Departments of Government should be brought into operation in the same area.

Village Communications

We must emphasise the vital importance of developing village communications in order to enable the health organisation to offer efficient service to the people. Without such development our whole plan for the rural areas may either be paralysed or lose the greater portion of its effectiveness. Further, the economic welfare of the village population largely depends on the development of rural communications and we stress the need for giving high priority to such development.

Ambulance

The provision of ambulances for the transport of patients is an important factor in the improvement of the efficiency of the health services. For each 30-bed hospital two motor ambulances and one animal-drawn ambulance have been provided in our scheme.

Travelling Dispensaries

In the sparsely populated parts of individual provinces it will be advantageous to provide travelling dispensaries to supplement the health services rendered by the primary health centres.

Utilisation of the Buildings, Equipment and Personnel made available from the Army after the War

The needs of a modern Army have brought into existence a number of health services and the personnel, equipment and buildings connected with these can, in many cases, be utilised in the development of our health programme. Anti-malaria units, hygiene squads, hospitals constructed for war purposes, military camps, large airfields with such amenities as roads, water-supply and lighting,

motor vehicles of various types, should all be made available, on easy terms, for the purpose of developing the health programme.

Delhi Province as a Demonstration Area

Some of us are of the opinion that Delhi Province is particularly suitable for being made a demonstration area by implementing here our proposals as well as those of other Committees which have put forward schemes for post-war reconstruction.

Objectives for the Third Five-year Term

45. While the proposals outlined above relate to the first ten years of the health programme, certain broad suggestions are put forward as the objectives to be kept in view for the third five-year term.

(1) Hospital accommodation to be raised to 2 beds for every one thousand of the population.

At the end of the first ten years our scheme provides for one bed per 1,000 population.

(2) Expansion of the scheme so as to cover three-quarters of the population of individual districts, wherever possible.

(3) The creation of 12 new colleges in addition to the 43 to be established during the first 10 years.

(4) The establishment of a fourth set of 100 training centres for nurses.

(5) The training of 500 hospital social workers.*

ORGANISATION AND ADMINISTRATION

46. On the administrative side we propose:—

(1) a Ministry of Health at the Centre;

(2) Ministries of Health in the Provinces and

(3) local area health administrations.

We consider it fundamental that the portfolio of health at the Centre and in the Provinces should be in charge of a separate Minister, so as to ensure his undivided attention being given to the development of the future health programme. The need for developing the health services in the closest possible co-operation of the people has

* Drs. Vishwa Nath and Butt foresee that diarchical conflicts will arise out of the application of these proposals for medical relief in the districts. In their view the existing machinery of medical relief, however inadequate and unsatisfactory, is not ill-suited to furnish the foundations for evenly spread improvements. They advocate as even a distribution of facilities accruing from increased personnel, accommodation and equipment, as the requirements of special institutions, geography and density of population may permit. On the other hand the others consider that, if the suggestion of these two colleagues is accepted, the result may be a congeries of unplanned accretions to the existing organisations for medical relief and preventive health work and that one of the fundamental purposes underlying the health plan put forward in the report will not be fulfilled. The scheme is intended to promote, from the beginning, the development of remedial and preventive health work on a unified basis as well as to provide an integrated institutional and domiciliary service to the people. The existing curative and preventive health services are, on the other hand, functioning independently of each other with unsatisfactory results. In all progressive countries the requirements indicated above are considered as essential features of a modern health organisation. For these reasons the majority consider that the suggestion of Drs. Vishwa Nath and Butt would destroy the essential requirements of the Committee's plan.

already been stressed. Both in respect of legislation and of administration it is likely that some of the measures to be undertaken will offend existing social and religious practices. A Minister, who enjoys the confidence of the people and can secure their co-operation, can alone carry such enactments through the legislature and enforce their working in the country.

47. After giving careful consideration to the question of the existing distribution of health functions between the Centre and the Provinces and to the large measure of autonomy that the latter enjoy under the Government of India Act of 1935, we have come to the conclusion that certain principles should be taken into consideration in formulating plans for future development. These principles are:—

(a) That the wide measure of autonomy that has been granted to the Provinces should be respected to the utmost possible extent. Our proposals for the future will make for considerable changes in existing health administration and professional education and we therefore feel that, in carrying out these recommendations, the closest possible co-operation between the Centre and the Provinces will be essential. In order to minimise friction and to promote mutual consultation between the Centre and the Provinces in the formulation of health policy and its implementation, there should be established a Central Statutory Board of Health consisting of the Central and Provincial Ministers of Health. The Centre, with its larger resources in money and technical personnel, should help the Provinces with grants-in-aid for the development of their health programmes and with such technical assistance as may be required. One of the important functions of the Board will be that of making recommendations to the Central Government regarding the distribution of grants-in-aid.

In our view the co-operation that may be expected to develop, as the result of these proposals, between the Central and Provincial Ministers of Health on the one hand and between their administrative and technical staff on the other, should create a firmer foundation for the harmonious development of the health programme over the country as a whole than a reversal of the policy of decentralisation and a resumption of powers by the Centre to regulate and control development in the Provinces. We recognise that there will be certain exceptional circumstances in which the Central Government should have power to interfere in Provincial administration. It is, however, to be expected that the machinery for consultation and co-operation, which has been suggested above, should help to reduce these occasions to the minimum. We believe that a Centre acting with sympathy and imagination may well be able to hasten the pace of progress in the provinces by promoting a spirit of healthy competition among them in their task of providing progressively higher standards of health administration in their respective areas.

(b) The Ministry of Health, Central or Provincial, should be the ultimate authority responsible for all the health services operating within its jurisdiction and should have power to lay down and enforce minimum standards of health administration for those services which are within the immediate control of other departments (*e.g.*, railways, prisons, labour, etc.).

(c) There should be the closest possible co-operation between the Ministry of Health and other departments of Government in order to promote the pooling of all the available facilities, curative and preventive, in the interests of efficiency and of economy.

(d) The Ministries of Health, Central and Provincial, should have the advice and guidance of technical experts in the planning and maintenance of their health services. As has been pointed out in the White Paper recently issued by the Ministry of Health in England embodying proposals for a national health service, "the provision of a health service involves technical issues of the highest importance and in its administration, both centrally and locally, there is room for special devices to secure that the guidance of the expert is available and does not go unheeded." We recognise the need for such technical guidance and have therefore incorporated in our proposals a recommendation for the creation of standing councils of experts at the three levels of Central, Provincial and local area administrations. These councils will consist of representatives of the medical, dental, nursing and other professions.

Functions of the Central and Provincial Governments

48. The main functions which we have recommended for the Central and Provincial Governments are broadly those for which they are responsible at present under the Government of India Act, 1935. In addition we have suggested that the Centre should take a definite lead in planning and promoting the development of health services, preventive and curative, in the country as a whole. Provincial activities in the field of health should be assisted and co-ordinated by the Centre through a system of grants-in-aid of approved schemes in the provinces and of technical assistance, where desired. Control of inter-provincial spread of communicable diseases, the sanitary control of inter-provincial traffic and the enforcement of standards regarding food and drugs in inter-provincial commerce should also be important functions of the Central Government.

In certain exceptional circumstances, the Centre should have power to take direct action in a province in the interests of the country as a whole. Such intervention should, as far as possible, be after consultation with the proposed Central Board of Health and, in cases requiring urgent action before such consultation could take place, the matter should be brought to the notice of the Board with the least possible delay.

49. We have recommended the establishment, in the provinces, of Provincial Health Boards and of Provincial Health Councils with composition and functions similar to those of the Central Board and Central Council.

Central and Provincial Health Services

50. The principal technical adviser to the Minister of Health will be the Director General of Health Services at the Centre and the Director of Health Services in a Province, who will function in each case as the single administrative officer for the curative and preventive departments of health. These officers will be assisted by a suitable number of Deputy and Assistant Directors General or Directors as the case may be, who will be in charge of different functions.

Recruitment and Control of the Central and Provincial Health Services

51. The following principles should, we recommend, guide the authorities concerned with the recruitment and control of the future Central and Provincial Health Services in India:—

(1) There should be separate and independent Central and Provincial health services appointed and controlled by the Central and Provincial Governments respectively, the venue of recruitment for

both being India. Recruitment to these services will be restricted to persons living in India except in the case of a small number of posts in connection with teaching and research institutions, for which it may be necessary to obtain suitable persons from outside the country. Such persons should be recruited from abroad on short-term contracts, every effort being made within the period of the contract to train a suitable Indian for the post.

(2) Appointments to posts in the teaching and research institutions should be made purely on merit. One-third of the general health service posts should also be filled on merit. In filling up the remaining posts consideration may be given to the need for communal representation, every community being given its share of the 66⅔ per cent in accordance with the proportions laid down by the Governments concerned. Of the candidates from individual communities the best available should be chosen. After admission into the health services promotion to higher posts should be regulated solely by merit.

(3) To secure opportunities for wider experience there should be exchanges of officers between the Centre and the Provinces to be arranged by mutual agreement.

(4) A proportion of the posts in the Provincial Cadres should have the same salary and status as in the Central service, so that the exchange suggested above may be facilitated.

(5) The Central and Provincial Services should be maintained as purely civil organisations.

(6) All members of these services should have opportunities of gaining experience of both urban and rural health work.

(7) There should be no reservation of posts under the Central or Provincial Governments for the civil branch of the Indian Medical Service.*

Health Administration in Local Areas.

52. We envisage a comprehensive health service, the success of which will mainly depend upon the fulfilment of the following conditions: (a) recruitment of the staff and the conditions of service should be on similar lines throughout the province so as to permit of the enforcement of fairly uniform standards of performance over the whole area and (b) there should be continuous and effective supervision by the higher technical staff over the work of the health personnel even in remote villages.

53. *District Health Board.*—These conditions can be fulfilled only by a health service maintained by a single authority and not through a number of separate services controlled by different local bodies. At the same time it is essential to associate the public with the formulation of health policy and with its implementation. We therefore recommend that, so far as health is concerned, in the place of the existing multiplicity of local health authorities with their separate staffs there should be a single health authority over the whole area operating through a unified executive staff. This authority may be designated the District Health Board and its jurisdiction will, in due course, extend over the district as a whole.

* In the place of a Central Ministry of Health Drs. Vishwa Nath and Butt propose a Central Board of Health with a Technical Secretariat discharging specific functions. Their views on the recruitment of the health services are also different from those set forth above. Their views and our observations on them are given in paras. 27—31 of Chapter XVII of Volume II of the report.

54. We consider, however, that the deprivation of the health functions exercised by local bodies should be limited only to such as are in our opinion unlikely to be able to maintain the standard of service we have recommended. We therefore suggest that certain large municipalities such as Calcutta, Bombay, Madras and Karachi, which are governed by their own Acts, as well as other municipalities having a population of at least 200,000, which may be considered by the Provincial Government as being in a position to maintain an independent health service of the required technical efficiency, may be excluded from the jurisdiction of the District Health Board. All these large municipalities should develop and maintain health organisations on the lines suggested by us.

55. In the early stages of the programme only limited areas in each district will be brought within the operation of our scheme. In these areas there will be, as shown above, a unified health authority with a provincialised health service covering all categories of personnel. For the areas outside our scheme we recommend that, in order to secure an improvement of the health administration of existing local bodies, certain legal and administrative measures which have been taken in the province of Madras should be applied in other provinces also.

56. We have suggested that representation of the people on the Board should be partly secured by direct election by the people and partly by election, from their own ranks, by the local bodies in the areas covered by our scheme. We have also suggested, that, following the lines laid down in the Madras Public Health Act, 1939, every municipality included in the area under our scheme should be required statutorily to contribute to the District Health Board not less than 30 per cent. of its income from all sources other than Government grants and that every District Board or *panchayat* should similarly contribute not less than 12½ per cent. of its income from such sources. Obviously the actual amount of the contribution in each case will depend on the proportion of the population under the local body concerned, which is brought within our scheme. Such contributions and any grants sanctioned by the Provincial Government will constitute the funds to be administered by the Board.

57. While the Board will enjoy a large measure of autonomy in order to ensure that local opinion in the district is permitted to influence health policy, it is essential that the Provincial Minister of Health should have the power of ensuring compliance by the Board with the general policy laid down by him. We have also recommended that certain legal provisions that exist in the Province of Madras enabling the Chief Administrative Officer of the Public Health Department to recommend specific action by local health authorities in particular directions for the improvement of the public health and to enforce the carrying out of such recommendations, subject to the concurrence of the Provincial Government, should be made applicable to all the areas under our scheme.

Recruitment and Control of the District Health Service

58. After giving careful consideration to the question as to whether the recruitment and control of the district health service should rest with the Provincial Government or with the District Health Board concerned, we have come to the conclusion that the balance of advantage is heavily in favour of the provincialisation of this service.

In our view, such provincialisation should extend over all the posts in the district health organisation because, if a certain number of the more responsible posts are provincialised and the others are left under the Board, the resulting dual control must, we believe, lead to inefficient administration.

59. The district health organisation will be in charge of an officer to be designated the Officer in charge of the District Health Service. Under our proposals he will be a Provincial Officer whose services are lent to the Board. He should be responsible for carrying out the health policy laid down by the Board and we recommend that he should be its Secretary. This officer will be removed by the Provincial Government if a recommendation to that effect is passed by the Board by a two-thirds majority, taking into consideration its full strength.

District Health Council

60. We have already recommended the creation of a District Health Council consisting of representatives of different professions (*e.g.*, those of doctors, dentists, pharmacists, nurses etc.) from the registered members of which the health service will be recruited. The functions of the Council will correspond to those of the Provincial and Central Health Councils. We recommend that the Officer in charge of the District Health Service should be the Chairman of this Council.*

Salaries.

61. We have given considerable thought to the question of the scales of pay to be proposed for the health staff. Obviously the country cannot afford rates of remuneration which are out of all relation to its national income and are higher than those which economic conditions demand. Further, too generous a provision on salaries may well wreck or at least greatly handicap the implementation of any large scale health programme. The question of salaries, moreover, is not one which concerns medical and public health personnel alone. The necessity for establishing some measure of parity between the various Provinces in the matter of the salaries of their public health staff has been strongly impressed on us by a Provincial Minister of Public Health. Another important consideration, in determining the scales of pay, is that of the competitive attraction provided by non-State employers. In the circumstances we feel that the subject is of such complexity and importance as to require comprehensive examination at the hands of an *ad hoc* all-India Committee which should include medical men. The results of such examination will be of the utmost value to the Central and Provincial Governments. We have, therefore, recommended the establishment of such a Committee. For the purpose of estimating the cost of our proposals we have either adopted existing rates or assumed scales of pay which appear to us *prima facie* to be generally not unreasonable.

THE NUTRITION OF THE PEOPL

62. The national health campaign is concerned not only with the prevention of disease but also with the development of a healthy

* Mr. P. N. Sapru holds views which are different from those of the other members regarding the constitutional aspects of certain of the proposals outlined above as well as the suggestion for a modification of the existing form of local health administration. His views are embodied in two minutes of dissent which are appended to Chapter XVII of Volume II of the report. Our reply to his remarks regarding local self-government will be found in paras. 58—61 of the same chapter

and vigorous population and improved nutrition plays a vital part in preventing sickness and in promoting positive health.

63. Under-nutrition and malnutrition exist widely in the country. According to the Director, Nutrition Research Laboratories, Coonoor, an insufficient and ill-balanced diet giving only about 1750 calories per day (as against the needed 2400 to 3000 calories) is typical of diets consumed by millions in India. Apart from inadequate nutrition being responsible for a lowering of the general standard of health of the individual, continued insufficiency of certain food factors in the diet will produce specific forms of disease. Such diseases are prevalent, to a varying extent, in different parts of the country. For instance, *beri beri* is not uncommon among adults and infants in the Northern Circars of the province of Madras, osteomalacia and rickets are prevalent in certain parts of Northern India, keratomalacia is a common cause of blindness in South India and goitre is not infrequent among the communities living in some parts of the Himalayan and sub-Himalayan regions.

64. The main defects of the average Indian diet are an insufficiency of proteins, mineral salts and vitamins. A general raising of dietary standards throughout the country is basically an economic problem, the solution of which depends on the scientific development of agriculture, animal husbandry and fisheries and the simultaneous development of industrial resources. We consider that food planning should have, as its ultimate objective, "the provision of an optimum diet for all, irrespective of income, and plans should be laid to reach the objective by forced marches, stage by stage, within a specified period of time."

65. As the average Indian diet is inadequate in respect of the quality and quantity of the protein consumed, one of the most urgent needs is the raising of protein consumption to the required level. Proteins of high biological value are of animal origin. A certain proportion of the protein consumed each day should be proteins of this type. We shall deal with three articles of food in this connection, namely, milk, fish and food yeast. Urea as a cattle feed deserves consideration in connection with increasing the availability of meat and its production will also be referred to briefly.

Milk.—The Director of Nutrition Research Laboratories, Coonoor, has suggested the inclusion of 8 ozs. of milk per day in the average Indian diet in order to improve its quality. Expectant and nursing mothers and children up to 14 years of age will need much more. We have suggested that, taking into consideration the existing demand for milk products, the target for realisation in the near future should be an increase in milk production to the extent of at least 110 per cent.

It has been brought to our notice that, very recently, the production of synthetic milk which, it has been claimed, has the same nutritive value as natural milk, has been developed on a laboratory scale in Great Britain. In view of the importance of the milk problem in India we desire to emphasise the need for immediate investigation into the claims put forward on behalf of synthetic milk and for promoting its production in India on a large scale, if these claims are justified.

Fish.—India's long coast-line, her numerous rivers, lakes and tanks afford great opportunities for developing the fish industry.

The total production of fish in India, both fresh water and marine is estimated at less than two crores of maunds per annum as against 9½ crores of maunds, the estimated requirement of Bengal alone where 90 per cent. of the people eat fish. These figures should help to give some idea of the extent to which the fish industry will have to be developed in India.

Food yeast.—Yeast is of value as a supplement to poor Indian diets because of its richness in proteins and vitamins of the 'B' group. Certain strains of yeast, which can be grown on molasses, produce palatable products of high nutritive value. We strongly recommend the immediate investigation of the possibility of producing food yeast on a large scale in India.

Urea.—It has been brought to our notice that, while the production of animal proteins, such as meat and milk, through a process of feeding natural foods to certain animals is a costly and uneconomical process, a simple chemical, urea, which can be produced in abundant quantities at a low cost, when fed to ruminants is converted largely into proteins of the animal body. The production of urea may be linked with the process of manufacturing synthetic nitrogenous fertilisers and it is thus possible to promote the manufacture of both cattle food and plant food at the same time. We strongly urge that this suggestion should be carefully investigated without delay.

66. Our further suggestions for improving the nutrition of the people include the production, in India, of the different vitamins in sufficient quantities to meet the requirements of the country as well as the provision of facilities for the storage, transport and distribution of food, particularly of perishable articles such as milk, fish and fruit.

67. *Prevention of food adulteration.*—The subject of food adulteration was recently investigated in detail by a Committee of the Central Advisory Board of Health. We support all its recommendations and, in particular, desire to draw the attention of the Governments in the country to three of these, namely, the establishment, on a permanent basis, of a standing Central Committee for Food Standards, which we understand has now been created by the Government of India on a temporary basis, the formation of provincial cadres of public analysts and the establishment of food laboratories in association with central and regional bacteriological laboratories in the Provinces.

68. Lastly, in order to secure an improvement in the quality of the food made available to the public, we recommend that the principles of the Agricultural Produce Grading and Marking Act, which now applies only to agricultural products, should be made applicable to articles of food other than agricultural and that early action should be taken to give effect to this suggestion.

HEALTH EDUCATION

69. According to modern conceptions, health education includes "not only instruction in purely health matters, but also those activities which are likely to influence favourably an individual's health knowledge, health attitude and health habits. Health education must promote health and health consciousness, and these are best achieved when health practices become part of an individual's daily life".

70. Health education is gradually taking its proper place in the life of the people in India, but progress has so far been slow. The teaching of hygiene is compulsory in all ordinary schools and it is also a subject of study in the curriculum of all normal schools and teachers' training institutions, but the standards of teaching vary from province to province. "The low standards of personal and environmental hygiene met with in many schools..... lead to the conclusion that something is wrong with the content of the syllabuses and the methods of teaching hygiene both in training institutions for teachers and in schools for children."

71. As regards the general population, health education is mainly carried out by the provincial public health departments. In most provinces a special health propaganda organisation exists in the office of the Director of Public Health. In certain provinces a good deal of hygiene publicity work is also being done in the rural areas by some other departments of Government. For instance in the Punjab, the Rural Reconstruction Department and the Co-operative Department have been actively co-operating in the health education of the people. In no province, however, has health education come up to the standard reached in the more advanced countries.

Our Recommendations

72. We support the recommendation of the Central Advisory Boards of Health and of Education that the instruction of school children in hygiene should begin at the earliest possible stage. Such instruction in the early stages should be entirely practical and devoted to the formation of health habits and the promotion of personal hygiene. It is particularly important that the student should see, in actual operation, the sort of hygienic and sanitary arrangements he is taught and encouraged to demand for himself. School clubs, societies such as the Indian Red Cross Society and the St. John Ambulance Association and organisations like the Boy Scout, Girl Guide, Hindustan Scout and Bratachari movements can actively help in the development of the health education programme for school children.

Health Education of the General Population

73. The main responsibility for assisting and guiding the health education of the general population should rest on the health departments of Governments and the establishment is recommended of properly constituted Health Publicity Bureaux as part of the Central and Provincial Health Departments. One of the functions of the Central Health Publicity Bureau should be participation in the active promotion of health education among all sections of the population and the giving of suitable advice and help to provincial health departments in organising health propaganda in their own territories. Another important duty of this Bureau should be the publication of an Indian Health Journal.

74. The organisation of health propaganda is a highly specialised task and it should therefore be entrusted to persons capable of producing results. The methods of propaganda which commercial organisations, such as the Indian Tea Association, have employed with great success should be studied and adopted, as far as practicable, in the development of the health education campaign.

75. The establishment of permanent health museums in the larger towns and cities is also recommended.

PHYSICAL EDUCATION

76. Till the beginning of the twentieth century no one looked upon physical education as an integral and important part of general education. During the last 20 years revolutionary changes have taken place in all civilised countries in the concept and content of physical education and training.

77. Something has been done in India to give physical education and training their proper place in the educational structure, but a great deal remains to be accomplished. There is a great dearth of suitable teachers qualified to impart instruction in this important subject. We require many suitably equipped and staffed physical education schools and colleges in the country. At present there are only five physical education colleges in India. At a rough estimate the total number of physical training teachers trained at these institutions during the last 20 years, does not exceed 3,000—far too small a number for the needs of the country.

Our Proposals

78. (a) *The training of physical education instructors.*—For the proposed post-war schemes of education thousands of qualified physical training teachers will be required. We therefore recommend that there should be one or two physical training colleges in each province. Each institution should grant a recognised qualification. In addition, physical education should be made a compulsory subject in normal schools. A certain number of qualified physical training instructors should be sent abroad at State expense for higher training. On return they should be employed in responsible administrative and teaching posts, where their special training would be of value.

79. (b) *A physical training programme for the community.*—In the beginning it may be advantageous to develop a single organisation to serve the needs of school and college students as well as of the general public. The school master, because of his general education and of the influence he is able to exert on successive groups of pupils, is in a position to evoke a favourable response from the public in the matter of physical education and culture. He should therefore be utilised for developing a physical education programme for the adult population. It will be necessary to establish a suitable organisation in each province and this may, with advantage, be made part of the Provincial Education Department. It is essential that this organisation should establish close liaison with the Health Department.

The national physical education programme should include indigenous games, sports and folk dances. A blending of the old and the new in an attempt to evolve a sound scheme of physical culture is advisable. In this programme separate provision should be made for students, the male adult population and for girls and women.

HEALTH SERVICES FOR MOTHERS AND CHILDREN

80. We have drawn attention to the high rates of morbidity and mortality prevailing among mothers and children in this country.

Measures directed towards a reduction of sickness and mortality among these sections of the community must have the highest priority in our programme of health development.

The Primary Unit.—The staff available for health service for mothers and children in a primary unit will consist of a woman doctor, four public health nurses, four midwives and four trained *dais*. The provision for institutional service will consist of a dispensary at the headquarters of the unit and a hospital of 30 beds serving four such units together. At the dispensary there will be provision for four beds, of which two will be for maternity cases. In the 30-bed hospital six beds will be set apart for maternity and gynaecological cases and there will be four cots for children.

81. At the headquarters of each primary unit and in the places in which 30-bed hospitals are located, the services of a medical officer will be available and there will also be provision for a small number of maternity beds. With these facilities it should be possible to organise a maternity and child welfare centre on a reasonably efficient basis. Its range of activity can be expanded as and when more trained personnel and funds become available and communications improve. The functions of the centre will include the following:—

(a) to get in touch with as many pregnant women in the area as possible and to persuade them to visit the clinic regularly, so that periodical examinations may be carried out and a record of their medical history kept;

(b) to provide for the skilled assistance of a midwife or trained *dai* at the time of delivery and for domiciliary visits by her for two weeks thereafter;

(c) to keep the mother and infant under observation, if possible, for a year;

(d) to teach mothercraft in all its branches and to inculcate sound hygienic habits in the mother and child;

(e) to keep children under observation, if possible, till five years of age;

(f) to organise periodical talks, by suitable persons, for husbands and fathers in order to secure their co-operation in the development of a healthy and happy home and

(g) to aim, in general, at becoming the focus of social activity in the area as far as mothers and children are concerned.

Whenever practicable, a playground for children of two to five years of age should be provided as close to the centre as possible, with toilet accommodation for mothers and children and with bathing facilities.

82. In the other three circles of each primary unit, to which we have already referred in describing the short-term health organisation, the resident staff will be only a public health nurse, a midwife and a trained *dai*. The woman medical officer of the unit should visit the headquarters of each of these units once a fortnight. The public health nurse should hold a weekly session while the woman medical officer should attend every alternate session. The same lines of activity should, as far as possible, be followed in the peripheral circle as those described for the maternity and child welfare centre at the headquarters of the primary unit.

83. *The Secondary Unit.*—The 200-bed hospital at the headquarters of the secondary unit should have about 50 beds reserved for maternity and gynaecological cases. In the second five-year period of the short-term programme the 200-bed hospitals constructed during the first five years will, it is hoped, be enlarged so as to provide 500 beds. In this case the provision for maternity and gynaecological cases should be raised to about 125 beds. The better facilities thus made available in these institutions will make a higher type of service possible, while the telephone and ambulance organization, which we have recommended, will help to extend these facilities to the more serious cases occurring in the primary units.

84. *The Provincial Headquarters.*—At the headquarters of each province there should be, on the establishment of the Director of Health Services, a competent woman doctor with wide experience in the organisation of health services for women and children.

Social and Economic Factors

85. The two most important among these factors are inadequate nutrition, including malnutrition and under-nutrition, and the strain resulting from over-work in the home or outside.

Nutrition.—The pregnant woman, nursing mother and the growing child require a more generous and nourishing diet than the general population and the health services for these two sections of the population, howsoever elaborate and efficient, will fail to produce satisfactory results unless simultaneous measures are taken to improve their nutrition. An annual provision has been suggested in the budget of each primary unit in order to enable the woman medical officer to make suitable additions to the diet of pregnant women, nursing mothers and growing children.

Overwork.—The strain resulting from overwork affects a woman's health both during pregnancy and in the postnatal period. In the chapter relating to industrial health the grant of maternity benefits and compulsory abstention from work for a period of six weeks before and six weeks after confinement are recommended for all women employed in industry. We have suggested that these concessions should, in due course, extend to all women gainfully employed outside their homes.

Nurseries

86. The provision of nurseries or *creches* to relieve the mother, especially the working woman, from her responsibility for the care of the child during her hours of work, has been a noticeable development in all highly industrialised countries. In this connection we wish to draw attention particularly to what has been accomplished in the Soviet Union for the development of nurseries as an integral part of the child welfare organisation (*vide* Appendix 13, Volume III). The nursery in Soviet Russia serves a three-fold purpose, *viz.*, that of relieving the mother, of caring for the child and of educating the mother and child. The aim is to make children healthy in body and mind, to draw out their innate faculties and to make them self-reliant.

Maternity Homes

87. The establishment of private maternity homes, in response to the growing demand of the public for institutional facilities for

confinement, is a noticeable feature in some of the larger urban centres. The strictest possible control should be exercised by local health authorities over the establishment and maintenance of such institutions. The provincial Ministry of Health should prescribe suitable standards in respect of these homes and should see that they are enforced.

HEALTH SERVICES FOR SCHOOL CHILDREN

88. In India, school health services are practically non-existent, and where they exist, they are in an undeveloped state.

The Functions of a School Health Service

89. The duties to be performed by a school health service fall into two main groups: (i) health measures, preventive and curative, which include (a) the detection and treatment of defects, physical and mental and (b) the creation and maintenance of a hygienic environment in and around the school, and (ii) measures for promoting positive health. The last should include (a) improvement of the nutritional state of the child, (b) physical culture and (c) health education by formal instruction and the practice of the hygienic mode of life.

The duties enumerated in (i) above should be performed by the health organisation while those indicated in (ii) will devolve on the teacher. There should, however, be close co-operation between the health and education staffs.

Some General Suggestions

90. (i) In each primary unit the male medical officer should normally be put in charge of the school health service.

(ii) To begin with, this health service should be restricted to primary school children, their number being limited to 1,000, which is as much as the medical officer can look after efficiently.

(iii) At least two teachers from each school should receive training in certain elementary health duties and should receive an additional remuneration for attending to such duties.

Stages of Development

91. The proposed school health organisation should first be developed in an area close to the headquarters of a province, in association with the Department of Preventive Medicine in the medical college located there. The second stage would mark the extension of the school health programme to the districts in two steps, namely, to the headquarters of the secondary units and subsequently to the headquarters of individual primary units. Two more stages are envisaged, these being extensions of the scheme so as to include (1) the whole area of individual primary units and (2) the students of secondary and high schools and of colleges.

92. The school health work to be carried out in a primary unit should include all the main functions of a school health service to which we have already referred. We suggest that a school clinic should be established at the headquarters of each primary unit to perform duties in connection with the school health programme in the same manner in which the maternity and child welfare centre we have recommended is intended to help in the promotion of health

work among mothers and children. Besides providing treatment for minor ailments to the pupils in all the schools included in the scheme, the clinic should undertake certain specialised types of service such as dental care and the treatment of conditions relating to the eye, ear, nose and throat, which are relatively common among children. Such provision will be supplemented by a certain amount of routine treatment carried out in the school by the two specially trained teachers referred to above, under the guidance and supervision of the school medical officer. Follow-up work in the homes of the children by the public health nurse in order to discover and rectify, as far as possible, such defects in the home environment as are responsible for the illhealth of the pupil is also an important part of the preventive school health campaign.

93. We desire to see the school clinic developed into an organisation for bringing together the children, the parents and the teachers. For this purpose periodical meetings should be arranged at which interesting and educative programmes should be developed. Educational films can be shown, short talks on health matters arranged and people with special talent for music and other forms of entertainment, whether among the pupils, teachers or parents, encouraged to play their part towards making such gatherings a success. The atmosphere of goodwill that can thus be developed will be of advantage to all.

Co-operation between the Health and Education Authorities

94. *The District.*—If our suggestions for the future development of local self-governing institutions are carried out, there will be a District Health Board and a District Education Board functioning over practically the whole area of individual districts. In each district, a Joint Committee of the District Health and District Education Boards should be established and this body should be responsible for ensuring that the necessary co-operation between the health and education authorities is secured.

95. *Provincial headquarters.*—At the headquarters of the province there should be a Co-ordinating Committee with the Director of Public Instruction and the Director of Health Services as members. The managements of private schools and of approved associations of teachers and of parents should also be represented on this Committee, which will advise Government on all matters relating to school health administration, including the distribution of grants-in-aid.

OCCUPATIONAL HEALTH INCLUDING INDUSTRIAL HEALTH

96. The conditions affecting the health of the worker may, broadly speaking, be divided into two groups, namely, those which he shares with the other members of the general community among whom he lives and those which are associated with the occupation he pursues. In regard to the latter there may be special hazards to health arising out of particular occupations. The development of anthrax by those handling wool or skins and hides or poisoning by lead, chrome and other substances which are used in a variety of trades or manufacturing processes are examples of such special hazards. There are also other factors which have their influence on the health of the worker and these include the lighting, ventilation and general sanitation of

the workshop or factory, the dust and noise associated with the working environment and the provision that exists for rest pauses, meals and personal cleanliness. Over and above the general provision for health protection which the worker can share with the other members of the population, he has the right to claim that special measures should be taken to counteract the adverse effects of those factors which are associated with his occupation. The provision of such special health measures is the function of an industrial or occupational health service. To a greater or less extent, all those who are gainfully employed outside their own homes will require the services of the occupational health organisation. While recognising this as the ultimate objective we realise that, in the immediate future, Governments will have to concern themselves with measures mainly for industrial workers, including within that term those who are employed in factories, docks, mines, plantations, transport services and certain other occupations.

The Functions of an Industrial Health Service

97. The functions of an industrial health service have been well described in the following words by the Social and Preventive Medicine Committee of the Royal College of Physicians, London, in their Second Interim Report which deals with industrial medicine:—

(a) to promote the general health of the worker by providing a good working environment and fitting him to the latter;
(b) to prevent occupational disease;
(c) to assist in the prevention of injuries at work;
(d) to organise a service for emergency treatment;
(e) to help in restoring the injured and disabled to full working capacity;
(f) to educate workers in the preservation of health and promotion of wellbeing and
(g) to promote research and investigation.

These may be accepted as the objectives to be aimed at in organising an industrial health service in India.

98. The proposed industrial health service will not minister to the general medical needs of the workers. This function will have to be performed by the health service for the community as a whole. The industrial health organisation is intended to meet the needs of the worker in respect of that group of factors affecting his health which are associated with the occupation he pursues. The two services are complementary to each other and will together provide him with adequate medical care. The industrial health organisation should form an integral part of the Provincial Health Department and should be developed as such.

99. We understand that the creation of a Central Health Insurance Fund, which will be raised by contributions from Government, employers and workers and will be utilised for the benefit of the workers, is under contemplation. If the proposed Central Fund comes into existence, it should be possible, by grants from it to promote the development of an even higher level of general health service for industrial workers than that envisaged under our short-term scheme for the community. Further grants from this fund, if available, could be utilised for establishing an industrial health organisation on the lines indicated above.

100. While these proposals for an industrial health service will obviously take time to materialise, we have put forward certain recommendations for early consideration and appropriate action by Governments. These recommendations cover a wide field and it is only the more important ones among them that are referred to here. For more detailed information reference should be made to Chapter X of Volume II of our report.

Maternity Benefit

101. The maximum period for maternity benefit for women workers under the different Provincial Acts is four weeks before and four weeks after childbirth. Under the International Labour Convention the period recommended is six weeks in both cases and we endorse this recommendation. During these periods a woman worker should be paid her full wages, because it is just at this time she requires nourishing food and special treatment.

Hours of Work

102. From the health point of view, we recommend that the maximum hours of work should be reduced to 45 hours a week, *i.e.*, 8 hours a day for five days and 5 hours for another day in the week and that the Factories and other Acts should be amended accordingly.

In the case of seasonal factories, which may be obliged to work under considerable pressure during only a part of the year, this maximum may be increased after taking into account such relevant factors as the extent of hazard to health which the occupation involves and the distance that the workers will have to walk back to their homes.

We recommend an interval for the mid-day meal of not less than one hour, exclusive of working hours.

The period during which a worker may be continuously on night duty should be limited by statute to a fortnight.

Housing

103. In our opinion the housing of the industrial population is primarily the responsibility of the Governments concerned. The following minimum standards of housing are, we consider, required for the health of the industrial worker and his family.

(i) For a single man: a room 10 ft. × 12 ft. × 10 ft. and a verandah 8 ft. × 8 ft. × 10 ft. For a group of such quarters there should be provided community kitchens, latrines and bathing places in accordance with the standards to be prescribed by the Provincial Government. Where common kitchens are not provided, provision should be made for *choolas* on the verandahs with suitable chimneys for the outlet of smoke. Where latrines and bathing places for common use are erected, they should be at a reasonable distance from the quarters and, if possible, connected by a covered way for protection during bad weather.

(ii) For a family: for a married couple, two rooms 10 ft. × 12ft. × 10 ft. with a verandah, kitchen, bath-room and latrine. For a family including grown up children the accommodation should be increased by at least one extra room of similar size.

(b) In regard to sanitary conveniences, we suggest that, as far as possible, septic tank and soil distribution systems should be introduced so that the handling of nightsoil may be avoided.

The Nutrition of the Workers

104. Our recommendations for improving the nutrition of the workers include making it obligatory for industrial establishments employing a minimum number of workers to maintain canteens providing suitably balanced diets at reasonable cost, the encouragement of workers by employers to observe regular meal hours, the strengthening and stricter enforcement of the law relating to the sanitary control of the production, distribution and sale of food, including measures against adulteration, the active promotion of schemes designed to improve milk production and its supply as an article of food to workers and the establishment of nutrition sections in Provincial Health Departments, which should carry out nutritional surveys among industrial workers and assist in improving the nutrition of workers through educative work among employers and employees.

The Zoning and Location of Industry

105. (a) Town and Rural Planning Acts should be passed by Provincial Legislatures setting up in each Province a separate Ministry for Housing and Town and Rural Planning with wide powers to deal with the housing of the industrial population and with the zoning and location of industry.

(b) Before the establishment of any new industry or factory is agreed to by the Provincial Government, the Minister should satisfy himself that, in the lay-out, adequate provision is made for the housing of workers, for their transport to and from the factory and for adequate environmental amenities.

(c) We wish strongly to reiterate the recommendation of the Royal Commission on Labour that Provincial Governments should take steps to prevent industries being established in places where there will not be sufficient room for adequate housing or other necessities such as water supply, electric power, etc. This should be the function of the Ministry of Housing and Town and Rural Planning if established, and, under the appropriate legislation, rules should be framed to regulate the growth of industries from this point of view.

(d) Where possible, having regard of course to the relevant economic factors, new industries should be dispersed in rural areas so that the local inhabitants may derive the fullest benefit from industries being brought within their immediate circle. The present system of establishing factories near or in big towns, where the workers are forced to live in crowded tenements and under artificial and insanitary conditions, is harmful alike to the town dwellers and the workers themselves. The health problem of workers in such industries would be greatly simplified if industrial establishments could be located in rural surroundings.

Employment of Children

106. (a) The minimum age for employment in industrial establishments, docks, etc., should be raised to 15 and persons between 15 and 17 should be eligible for employment as adolescents on the certificate of the certifying surgeon.

(b) the minimum age for the employment of children on plantations and public works should be 13.

(c) In course of time when the compulsory school leaving age is raised and adequate educational facilities become available, the employment of children under 15 should be abolished for all types of industrial establishments and occupations.

HEALTH SERVICES FOR THE MORE IMPORTANT DISEASES

107. We shall deal here with the specific measures necessary for controlling the prevalence of the following diseases.

1. Malaria.
2. Tuberculosis.
3. Smallpox.
4. Cholera.
5. Plague.
6. Leprosy.
7. Venereal diseases.
8. Hook-worm disease
9. Filariasis.
10. Guinea-worm disease
11. Cancer.
12. Mental diseases and mental deficiency.

MALARIA

108. We have already pointed out that malaria is by far the most important disease in India from the point of view of morbidity and mortality and that the economic loss it entails is immense. A tragic feature of the situation is that much of the malaria in the country is man-made. In many cases roads, railways and irrigation projects have a sinister account to their credit, their embankments having caused conditions of water-logging favourable to the breeding of the malaria carrying types of mosquitoes. The failure of irrigation engineers to provide for adequate drainage when water is brought into previously dry areas has been another fruitful cause of the spread of the disease, recent examples being certain areas in Sind, the province of Madras and Mysore.

Our Recommendations

109. *Antimalaria organisations in the Provinces and at the Centre.* —The Director, Malaria Institute of India, has pointed out that "an essential preliminary to the successful control of malaria in India is the formation of an adequately staffed *permanent* malaria organisation in each province, the activities of which should be linked up with those of the central organisation of the Government of India". We fully endorse this view. Our recommendations, therefore, include the establishment of antimalaria organisations in the provinces as well as the strengthening of the staff of the Malaria Institute of India in order to enable it to fulfil its important tasks of advising provincial administrations in the development of antimalaria measures, of co-ordinating such work in the provinces and of training the higher types of malaria personnel for the country as a whole.

110. The general provincial plan we have recommended is the creation of an organisation at the headquarters of each province and

the establishment of a number of malaria control units, each under a medical officer specially trained in antimalaria work, for operating in the affected areas in different parts of the province. The most essential requirements are (a) the provision of trained staff in adequate numbers and (b) the supply of drugs, appliances and other equipment necessary for carrying out effectively the campaign against the disease. We deprecate the idea of spending large sums of money on the erection of elaborate buildings in the early stages of our progamme.

Drugs for Treatment

111. Quinine and mepacrine are the two drugs which are widely used for the treatment of malaria. There is already an indication that an even more effective synthetic product, paludrine, is likely to come into the field at an early date. We recommend that the following three general principles should guide the production of quinine and other antimalaria drugs:—

1. the prices at which antimalaria drugs are made available to the people should be sufficiently low to enable the poorest classes to obtain them in adequate amounts for the effective treatment of the disease.
2. these drugs, in whatever provinces they may be produced, should be made available, on an equitable basis and on reasonable terms, for the needs of all parts of the country and
3. no delay should be allowed to occur in developing their production.

We as a Committee would prefer to leave to the Governments in the country the responsibility for deciding whether private enterprise should or should not be associated with the production of quinine and other antimalaria drugs.*

112. *Quinine and mepacrine.*—If the estimate of 100 million individuals suffering from malaria every year is reasonably correct, it seems safe to assume that at least 120 to 150 million cases of the disease will have to be treated annually. The Malaria Commission of the League of Nations has recommended 75 grains of quinine as the minimum quantity required for the treatment of a case. On these estimates of malaria incidence in India the amount of the drug necessary for the country as a whole will be in the neighbourhood of about 1·5 million pounds per year, if quinine is alone used for treatment. The average annual consumption of the drug in the pre-war period in India was 210,000 pounds and, of this amount, only about a third was produced in India. The quantity consumed every year in this country would provide adequate treatment for about 19·6 million patients. As the objective to be kept in view for the immediate future, we recommend that sufficient quinine and mepacrine should be provided to meet jointly the requirements of at least 50 million patients. As regards quinine our immediate objective should be the raising of its production to the pre-war level of consumption in India from indigenous bark alone. As regards mepacrine, provision should be made for its production in the country in sufficient amount to meet the requirements of 30 million patients.

* Sir Frederick James desires to see that private agencies are given the fullest opportunity to take part in quinine production with technical advice and a price guarantee provided by the State. His views are set out in a note which is appended to the section on malaria in volume II of our report.

Anti-malarial Insecticides

113. The cultivation of the pyrethrum plant has been successfully undertaken in various parts of India including Kashmir, the Punjab Hill States, the United Provinces, the Central Provinces, Madras and Orissa. It has been estimated that, in order to make the country self-sufficient, pyrethrum cultivation will have to be extended to about 120,000 acres so as to produce an annual output of about 15,000 short tons (2,000 lbs. for a ton) of pyrethrum flowers. In D. D. T. an even more powerful insecticide has come into use.

114. As an insecticide the relationship of D. D. T. to pyrethrum is somewhat similar to that of mepacrine to quinine in the treatment of malaria. There is the possibility in both cases of the synthetic substance replacing the use of the other. The cultivation of pyrethrum can, in this event, be replaced at short notice by other crops.

TUBERCULOSIS

115. Annually about 500,000 deaths take place from tuberculosis in India and about 2·5 million open cases of tuberculosis exist in the country. These patients are continually disseminating infection among those with whom they come in contact. There is reason to believe that the incidence of the disease is higher in urban and industrialised areas than in rural regions. Owing to the migration of the labour population between industrial and rural areas and the increased facilities for rail and road transport, the tendency has been for tuberculosis to spread to the country-side. Certain factors such as malnutrition and under-nutrition and insanitary and overcrowded housing conditions also contribute their share to the dissemination of infection.

116. An essential requirement for controlling the spread of tuberculosis is provision for the isolation and treatment of infective cases. As against an estimate of 2·5 million infective patients in the country the total number of beds available for isolation is in the neighbourhood of 6,000. The number of doctors with sufficient experience of tuberculosis work to qualify them for posts in tuberculosis institutions does not probably exceed 70 or 80, while those who have had a short course of four weeks in the subject may number about 250 or 300. Fully trained tuberculosis health visitors are, in all probability, only about 100.

117. This brief statement of the existing position should help to show the magnitude of the health problem which tuberculosis presents in this country and the total inadequacy of the existing facilities for dealing with it.

Our Recommendations

118. In order to provide a comprehensive and integrated service the tuberculosis organisation should include, (1) a domiciliary service, (2) clinics, (3) hospitals, (4) after-care colonies, (5) homes for the incurable and, in addition (6) certain ancillary services.

119. *A home isolation and treatment service.*—A scheme for organised home treatment has been working in Delhi during the past few years under the guidance of the New Delhi Tuberculosis Clinic maintained by the Tuberculosis Association of India. This scheme has attained only very limited success, the reasons being (1) certain difficulties arising out of the war, (2) the extremely unsatisfactory

housing of the poorer sections of the community and (3) the inadequacy of the funds made available for its working.

120. The question of housing seems to present the greatest difficulty, particularly in respect of tuberculosis patients of the poorer classes, who live in one-room tenements where isolation is impossible. We recommend that, as a part of the antituberculosis campaign, local authorities should construct and maintain a number of suitable dwellings into which the patient and members of his family can be removed. Patients among the poorer sections of the community will, on such removal, require to be provided with accommodation free of charge.

121. *The tuberculosis clinic.*—The clinic forms the centre from which curative and preventive work in tuberculosis will spread into the homes of the people. The treatment facilities it offers will help to cure a certain number of patients, while the more advanced cases will be sent for treatment in hospital. Those patients whose condition is too advanced for attendance at the clinic, will receive domiciliary treatment from the medical and nursing staff of the clinic. During visits to the home the patient will be advised, by the doctor and the nurse, to carry out effective isolation, contacts will be persuaded to attend the clinic for examination and early detection of the disease and steps will be taken to promote the welfare of patients and their families by establishing contact between them and voluntary organisations interested in welfare work.

122. *Tuberculosis hospitals.*—The provision of sufficient hospital accommodation to meet the requirements of the country is bound to take many years and therefore in the early stages, only such patients as are likely to benefit should be admitted to hospitals.

123. Our proposals for the development of hospitals and clinics during the short-term programme are given below:—

Institutional service.

The first five-year period:

(1) the establishment of a 200-bed tuberculosis hospital for each unit of 10 million population;

(2) The establishment of a large clinic (to be designated the "Main Clinic"), with facilities for the training of medical and non-medical tuberculosis personnel, at each of the places where the 200-bed hospital will be created and

(3) The establishment of clinics of a smaller type at the headquarters of each district in British India. The total number required, after deducting the 33 main clinics, will be 183.

Second five-year period:

(1) 33 more 200-bed hospitals;

(2) 33 more main clinics at the same places where the new hospitals will be located and

(3) 183 more district clinics.

The clinics and hospitals can serve only limited areas around the places where they are located. Even so, in these limited areas, a domiciliary tuberculosis service should be organised in association with

each clinic. A certain number of suitable cases will be sent by the clinic to the nearest tuberculosis hospital for more satisfactory treatment than can be provided locally.

124. *After-care of patients.*—In a considerable proportion of cases tuberculosis patients do not completely recover their previous health and, in order to prevent relapse, it is essential that less strenuous working conditions and a more hygienic home environment should be provided for them on their return from hospital. To meet these requirements after-care colonies should be established in close association with every tuberculosis hospital.

125. *Homes for incurables.*—The need here is for the provision of such care as will make the final phase of sickness reasonably comfortable for the patient. We recommend that, while Governments should undertake the building and equipment of such institutions, their maintenance can be suitably entrusted to philanthropic or religious organisations interested in social welfare, Governments undertaking to meet a substantial part of the expenditure through generous grants.

126. *Travelling tuberculosis units.*—One way of extending the activities of the tuberculosis organisation outlined above is by providing travelling tuberculosis clinics based on the district clinic and working as far into the rural areas as possible. These units will have motor vehicles so equipped with all the necessary drugs and appliances, including provision for x-ray examination of patients, as to enable them to carry diagnostic and treatment facilities of a reasonably high order to the areas served by them. These units should have a fixed itinerary and should make about 3-4 visits per month to each of the 30-bed hospitals and dispensaries at the headquarters of individual primary units in the areas under the scheme. Apart from the diagnostic and treatment facilities which these units can offer, they should also help the tuberculosis campaign by carrying out intensive education propoganda in those areas.

SMALLPOX

127. Smallpox is one of the three major epidemic diseases of India, the other two being cholera and plague. During the period of 60 years, 1880-1940, the average annual rate of smallpox mortality per hundred thousand of the population has varied from 10 to 80. Even after making allowance for such variability, there is reason to believe that the total incidence of the disease has decreased in the country as a whole. For instance if the two ten-year periods, 1902-11 and 1932-41, are compared and due allowance is made for the increase in the population of the country, the rates of mortality from smallpox per 100,000 of the population are seen to be 40 and 25 respectively. Nevertheless, it is a matter for serious concern that the average number of deaths per year from smallpox for the period 1932-41 should have been as high as 70,000. The annual epidemiological reports which are published by the League of Nations show that the rate of incidence of smallpox in India is the highest among all the countries for which statistics are given.

128. Striking evidence of the fact that the vaccination campaign in the country has not so far been carried out effectively is that, of

the total number of smallpox deaths at all ages, high proportions occur among infants under one year of age and among children between 1 to 10 years. During the five-year period, 1937-41, deaths due to smallpox among infants under one year, when expressed as percentages of the total mortality from this cause at all ages, ranged from 12·1 to 19·7 and, during the same period, the corresponding percentages for children between one and ten years varied from 19·2 to 30·5. If effective primary vaccination is being enforced in the country, it is children under ten who should have the highest measure of protection.

129. One of the serious consequences of smallpox is that, not infrequently, those who recover from it lose their sight partially or wholly. Blindness is a very serious handicap in life to all persons and is particularly so in the case of children with the prospect of a much longer period of disability than for those who lose their sight at a more advanced age.

Our Recommendations

130. *Primary vaccination and revaccination.*—Primary vaccination was compulsory in 1941 in only about 81 per cent of the towns and 62 per cent of the rural circles in British India. In the province of Bombay primary vaccination was compulsory only in 4·9 per cent of the rural circles while in the North-West Frontier Province, the United Provinces, Sind, Assam, Coorg and Ajmer-Merwara it was not enforcible even in a single rural circle. Revaccination has been made compulsory as a routine measure only in the province of Madras.

131. We consider it essential that primary vaccination should be made compulsory throughout the country without delay. We also recommend that other Provincial Governments should, as early as possible, follow the example of the Government of Madras in making revaccination compulsory.

132. *The training of vaccinators, their recruitment and conditions of service.*—There is considerable variation in the provinces as regards the training given to vaccinators, the methods of their recruitment and their conditions of service. The duration of the training varies from 3 to 10 months and the salary paid to them ranges from a minimum of Rs. 10/- per month in Bengal to a maximum of Rs. 50/- to a first class vaccinator in Madras. In the provinces of Bihar and Orissa the vaccinators employed in rural areas are given no salary at all, the fees they may realise from the people for vaccinations carried out in their homes being their sole remuneration. They are normally engaged for work only during the vaccination season, October to March. Such conditions of service cannot attract and keep the right type of worker.

133. The lowest figure for the average number of vaccinations performed in a year by a vaccinator was recorded in Bihar in 1939, namely 1,520, as against an average of 2,951 for British India as a whole and the highest figure of 7,587 for the Punjab.

134. In the areas under our scheme vaccination against smallpox should be one of the normal functions of the public health inspectors, public health nurses and midwives employed in each primary unit.

and the employment of a special class of vaccinators is not necessary. Vaccination is only one of the many forms of specific protection against particular diseases which the health department should provide for the people, and the operation itself is so simple that there is no justification for the employment of a special staff for this purpose. During the first year of the working of the programme the total population of 40,000 in a primary unit should be vaccinated. For this individual members of the staff mentioned above will be required to devote only about 18 to 20 days of work.

135. In the areas outside our scheme it is equally essential that an intensive vaccination campaign against smallpox should be organised without delay. An important step in this direction is an improvement in the training and conditions of service of vaccinators in many provinces. The number of vaccinators employed will have to be increased adequately and, basing our recommendations on data available from Madras, we have indicated how other provinces may institute an effective campaign of primary vaccination and revaccination.

CHOLERA

136. Cholera is another preventible disease which takes a heavy toll of life in the country and shows a wide range of variation in its incidence from year to year. Some idea of this range of variation may be obtained from the cholera mortality figures for the province of Madras in 1939 and 1943. In the former the total deaths from the disease numbered about 2,000; the lowest incidence recorded for 60 years. In 1943 it spread to every district in the province and the registered mortality from this cause was 117,000. The incidence of cholera varies from province to province, those in which its prevalence is high being Bengal, Madras, Bihar and the Central Provinces and, to a smaller extent, Orissa and the United Provinces.

137. The measures required for the control of the disease fall broadly into two groups, (a) those which are permanent and (2) those which are of a temporary nature. The former include the following:—

(1) the provision of protected water supplies;

(2) the satisfactory disposal of nightsoil so as to prevent the possibility of contamination, by infective material, of food and water supplies and

(3) sanitary control over the production, distribution and sale of food.

In regard to each of these the position in India today is far from satisfactory. Protected water supplies are available only in the larger towns and cities and they serve only small proportions of the population in individual provinces. Provision for the proper collection and disposal of nightsoil is quite inadequate in rural areas and in the majority of urban centres, including many towns and even certain cities. The sanitary control exercised over the production, distribution and sale of food leaves much to be desired in all parts of the country.

138. Anticholera measures of a temporary nature are of special value when an outbreak of the disease takes place. These include:—

(1) isolation and treatment of patients;
(2) disinfection of infective material and
(3) immunisation of the people by anticholera inoculation.

As regards (1) and (2) above little or no effective action is being taken in most parts of the country, particularly in the rural areas. Isolation hospitals are few in number and even those that exist are far from satisfactory as regards their staffing and equipment. As regards anticholera inoculation, the popularity of this measure has been a process of steady growth. The people have come to recognise its value and are, broadly speaking, willing to accept inoculation when an outbreak of the disease takes place.

Our Recommendations

139. *Permanent measures.*—We have suggested, in the chapters dealing with water supply and general sanitation, comprehensive programmes of development of urban and rural water supply and night-soil disposal systems. In providing these basic facilities for sanitary improvement, Provincial Governments should direct that, in fixing priority, consideration should be given to the incidence of cholera in individual towns and villages. In this way, the main centres of cholera prevalence can be brought under effective control and the spread of the disease from such sources of infection prevented. Simultaneously with these improvements the gradual extension, over the country as a whole, of the health organisation we have recommended should help to introduce a large measure of control over the food of the people so as to ensure freedom from contamination. There will also be a rise in the general level of environmental hygiene. The combined effect of all these measures is bound to be a marked reduction in the incidence of cholera and other bowel diseases.

140. *Temporary measures.*—The temporary measures we have indicated above should be carried out by the primary unit staff as effectively as possible. The active assistance of the members of the Village Health Committees would prove invaluable in enforcing these measures.

Pilgrim Centres

141. Pilgrim centres have, in the past, played an important part in the spread of cholera. The adoption of special measures for safeguarding the health of pilgrim centres has now become an established practice in the country. In addition it has been found useful to enforce the compulsory inoculation of persons against cholera before they are permitted to attend such festivals. At the instance of the Central Advisory Board of Health this measure has been carried out by a certain number of Provincial Governments in selected festival centres with encouraging results. The adoption of this measure on a wide scale should prove to be an additional precaution against the possiblity of outbreaks of cholera starting in festival centres.

PLAGUE

142. The history of plague in recent times dates from 1896 when it was introduced into the seaport of Bombay from China and spread

rapidly over very large parts of the country. In 1904 deaths from this disease reached the very high figure of nearly 1,150,000. Since then there has been a considerable reduction in the incidence of plague, the average annual mortality from this cause during 1939-41 being only about 19,350.

143. Plague is primarily a disease of certain rodents and human infection on an appreciable scale takes place only under conditions favouring close association between man and such rodents. In India the animal is the rat while, in other countries, the reservoirs of plague infection are certain other rodents. Man becomes infected from such animals through the bite of the fleas which live and feed on these animals.

144. Plague appears in two forms, bubonic and pneumonic, the latter being the more severe of the two. The rate of mortality in bubonic plague may be as high as 60 to 70 per cent among those who are attacked, while that for pneumonic plague is practically cent per cent.

145. Although the incidence of the disease has become very much reduced within recent years, the Director of the Haffkine Institute, Bombay, has pointed out that certain endemic areas exist in different parts of the country and that they constitute a constant threat in as much as, under favourable conditions, plague may spread from these centres to other parts of India. These centres are situated in cool and moderately damp areas from the Himalayas in the north through Central and Eastern India to the Deccan and the province of Madras.

Our Recommendations

146. The measures against the disease should mainly be directed against the rat as the primary reservoir of infection from which the disease spreads to man. The keeping down of the rat population in inhabited areas, particularly in the endemic centres of plague, is therefore an important preventive measure. Rats grow in numbers in human dwellings only when they can secure food and adequate protection. The elimination of these conditions is therefore the purpose to be kept in view. The systematic destruction of rats by various methods is also another important measure which should be generally adopted.

147. The steps to be taken for rendering the conditions in residential areas unfavourable to the growth of the rat population include (a) the construction of rat proof dwellings and rat proof grain stores and railway godowns, (b) control over the location of certain trades and industries which attract rats and (c) an improvement of the general sanitary condition of the towns and villages, as the throwing of garbage in public places encourages the breeding of rats by providing them with food. Our recommendations cover all these steps.

Treatment of Plague

148. Till recently, there was no specific treatment for plague and the efforts of the physician were mainly directed towards giving relief to the patient and to the keeping up of his strength. A few years ago the Director, Haffkine Institute, prepared a serum which, on field trial, was established to be definitely more effective than the ordinary form of treatment. Sulphapyridin and sulphathiazole have also been

found to be useful in the treatment of plague. Of the two, sulphathiazole is considered the better drug because its effectiveness is probably a little higher and its toxicity less.

LEPROSY

149. The number of persons suffering from leprosy in the world has been estimated as somewhere about five millions and, of these, leprosy patients in India are believed to be at least a million. "There is a belt of high incidence including the whole of the east-coast and the south peninsula, including West Bengal, South Bihar, Orissa, Madras, Travancore and Cochin. In the central parts of India the incidence tends to be lower but there are some foci of higher incidence. There is a belt of moderate incidence in the Himalayan foot hills, running across the north of India, while in most of the north-west of India there is very little leprosy."*

150. In the highly endemic areas its incidence may range from two to five per cent of the population and, in restricted areas, it may even be as high as 10 to 15 per cent. In the non-endemic regions of North-Western India, on the other hand, large areas may show no cases at all while the general level of incidence is stated to be as low as 0·01 per cent or one per ten thousand of the population.

151. Cases of leprosy are broadly divided into two groups, the "neural" and "lepromatous" types. The former constitutes the "benign" form of leprosy and the other the more severe and infectious type. While for the country as a whole the proportion of lepromatous cases is estimated at about 20 per cent of leprosy patients, there are areas where the proportion of this severer type is as low as 4 per cent and others in which it rises even to 50 per cent. In estimating the importance of leprosy as a public health problem the rate of incidence and the relative proportion of the lepromatous type should both be taken into consideration.

Our Recommendations

152. In order to promote antileprosy work on proper lines we put forward the following proposals for the short-term programme:—

(a) the creation of provincial leprosy organisations;

(b) an increase of the existing provision for institutional treatment of out-patients and in-patients;

(c) development of group isolation colonies;

(d) substantial financial help to voluntary organisations engaged in antileprosy work and

(e) the establishment of a Central Leprosy Institute.

The Provincial Leprosy Organisation

153. As a preliminary step towards organising antileprosy work on sound lines a leprosy organisation should be created at the headquarters of each province, in which the disease is a definite public health problem, this organisation being made an integral part of the provincial health service. At its head will be the Provincial Leprosy

* Report on Leprosy and its control in India (1941) by the Special Committee appointed by the Central Advisory Board of Health.

Officer, who will be responsible for organising antileprosy work in all its branches.

An Increase of the Existing Provision for Institutional Treatment

154. The leprosy clinic is an important link in the chain of measures for the control of the disease and it should perform the dual role of providing remedial and preventive care to the people in the same manner that the tuberculosis clinic does in the campaign against that disease. A start should be made by providing a properly equipped and staffed leprosy clinic in association with every secondary health centre hospital. Existing leprosy clinics require to be staffed and equipped properly in order to improve the quality of the work that they are doing.

155. Existing provision for the isolation of leprosy patients is limited to about 14,000 beds, while infective cases requiring isolation may well be about a quarter of a million. We propose that, in the first five years of our programme, an additional 14,000 beds should be provided and that, in the next five years, an equal provision of another 14,000 beds should also be made.

Development of Group Isolation

156. An adequate expansion of institutional facilities so as to provide for the isolation of all the infective patients in the country can hardly be expected to materialise for a very long time to come. The possibility of developing group isolation therefore requires serious investigation. Certain points to remember in this connection are that the period of isolation will be long, perhaps years, that provision should be made for medical care although it may not be of a very high standard, that the scheme, if it is to be widely adopted, should be sufficiently cheap to suit the economic level of the country and that provision should be made to promote corporate life in the isolated community and to enable the more able-bodied members of it to work and contribute towards the maintenance of the colony.

157. Certain experiments for developing isolation colonies have already been carried out in this country and are being projected in the near future. Local conditions vary considerably in different parts of the country and we consider that group isolation colonies should be developed in all the more important areas where leprosy is a health problem. We have suggested an annual expenditure of Rs. 3 lakhs on the development of such colonies during the first ten years.

Financial Help to Voluntary Organisations

158. Missionary bodies have so far contributed much more to the development of antileprosy work in India than public authorities. For instance, it is understood that a little over 10,000 beds out of a total of 14,000 in the country are maintained in missionary institutions. In addition to a wide expansion of measures against the disease under the auspices of the Governments and of local health authorities, it will be necessary for voluntary effort to continue unabated in this field and we have therefore recommended provision to the extent of Rs. 187·5 lakhs during the first ten years to sibsidise such effort.

The Central Leprosy Institute

159. We consider it necessary that a Central Leprosy Institute should be established, its main functions being (1) the training of

leprosy workers, (2) the active promotion of research in the subject and (3) the development of an information service providing the latest information regarding the treatment of the disease and antileprosy work in general for the benefit of Governments and organisations interested in leprosy in India.

VENEREAL DISEASES

160. The incidence of venereal diseases in India is unknown. A survey (the results of which were published in 1933) by Sir John Megaw, a former Director General of the Indian Medical Service, regarding the incidence of syphilis and gonorrhoea in this country showed that the rate of their total incidence was somewhere near 37 per 1,000 of the population. This is a sufficiently high figure to point to the urgent need for fuller investigation as well as for the starting of a campaign against them on as extensive a scale as circumstances would permit. Their importance from the point of view of producing sickness and incapacitation cannot be over-emphasised. Both syphilis and gonorrhoea are responsible for much blindness. Of the two, syphilis is the more important. If not treated in time and adequately, it produces degenerative changes of a varied character in the internal organs of the body and, in a certain number of cases, it also causes the condition known as the general paralysis of the insane. The disease is transmissible from parent to offspring and is responsible for a considerable proportion of the abortions and premature births that take place. Syphilis accounts also for a large amount of mental deficiency. Gonorrhoea, in its turn, contributes to ill-health through joint troubles and various conditions affecting the genito-urinary organs in both sexes. In women it may produce sterility.

Our Recommendations

161. The measures which are necessary for the control of these diseases may be divided into two broad groups, namely, (1) those which provide the best available forms of medical care, preventive and curative, and (2) those which are designed to discourage promiscuity and to control prostitution.

162. Our recommendations under (1) include the provision of free and confidential treatment to all persons seeking such treatment, of facilities without payment of fees for personal prophylaxis and of adequate facilities for the diagnosis of these diseases as well as the creation and maintenance of a follow-up service and educational work among the people in regard to their spread and control.

163. Measures designed to discourage promiscuity in the community and to control prostitution are obviously more difficult to devise and enforce than the medical measures recommended above. Education in a wide sense of the term, so as to promote the growth of the individual's moral sense and of his responsibility towards himself and the community, and sex education intended to create a correct appreciation of the problems of sex relationship and to impart knowledge regarding the spread of venereal diseases and the dangers that arise from them, must together provide the conditions essential to secure the success of any attempt to control indiscriminate sexual intercourse, whether it be in the restricted field of prostitution or

outside it. We have proposed the gradual provision of sex education to all sections of the community, such provision starting first with teachers in training schools and colleges and, through them, extending to school children and college students. Steps for controlling prostitution are also suggested. These include the enforcement of severe penalties on those who keep brothels and on landlords who promote the use of their premises for this purpose. As regards the prostitute, our recommendations are intended to provide her with adequate medical treatment for venereal diseases as well as to help her, through educative work, to return to the normal mode of life.

HOOK-WORM DISEASE

164. The hook-worm produces its harmful effect on the human host by the loss of blood it causes through feeding on him, by irritation of the bowels which it produces and the resulting disturbance of the digestive function and by the secretion of a poisonous substance which prevents the clotting of blood and thus promotes bleeding. The disease is widely prevalent in India. The labour populations in Assam and certain parts of South India and of the plantations in Coorg are heavily affected as well as the general population of certain parts of Travancore, Malabar and South Kanara. Varying intensities of infestation are found in the provinces of Bengal, Bihar, Orissa, the eastern portion of the Central Provinces, some parts of the United Provinces and the Punjab and on the east coast of Madras. The North-West Frontier Province, Rajputana, Sind, Kathiawar, Central India States, Hyderabad, Deccan and Mysore State are practically free.

165. Our recommendations regarding the provision of adequate arrangements for nightsoil conservancy in rural and urban areas will, if implemented, constitute an important step towards the control of hook-worm disease. Soil pollution through human excreta and the habit of walking barefoot constitute the two main factors responsible for its spread. What is therefore needed is that the people should be taught how to render these factors inoperative. The health education campaign, which we hope will be conducted in the schools and colleges and among the general population as an essential part of our programme, should help materially towards this end. In the meantime mass treatment, by the administration of the appropriate drugs, should be carried out among the heavily infested groups of the population. The simultaneous development of a system of nightsoil conservancy for such communities, on lines suited to local conditions, is also necessary.

FILARIASIS

166. The disease leads to the permanent swelling of the legs and certain other parts of the body, besides causing recurring attacks of fever and inflammation of the lymphatic system. It is responsible for a considerable amount of preventible suffering and disability, although it does not cause death.

167. Bengal is the most heavily affected province in India. The incidence of filariasis is high in the western districts of this province and its intensity gradually decreases eastwards and northwards. The

Chittagong Hill Tracts and the northern districts of Jalpaiguri and Darjeeling are free. In Assam the disease is present in many districts, although its intensity is lower than in Bengal. In Bihar its incidence is relatively high in the Gangetic plain and in Orissa in the coastal districts. In Madras areas of moderate prevalence exist in the districts of Tanjore, Kistna, Godavari and Vizagapatam and in Saidapet near Madras City, while the coastal tracts of Malabar and South Kanara districts and of the Indian States of Travancore and Cochin show areas of high incidence.

168. Extended research has failed to produce a satisfactory cure for this disease. The only effective measures against it known at present are those which are concerned with the control of the carrier species of mosquito. In the affected areas it is therefore essential that adequate control measures should be undertaken in order to secure an effective reduction in the mosquito population.

GUINEA-WORM DISEASE

169. Guinea-worm disease is widely prevalent in certain districts of the North-West Frontier Province while its incidence is relatively low in the Punjab. The Rajputana desert is free but many of the States in Rajputana and Central India contain heavily infected areas. In the Central Provinces, Bombay Presidency, the Nizam's Dominions and Madras Presidency the disease is prevalent over wide areas. Well watered tracts, with a fairly heavy rainfall such as Bengal, are generally free.

170. The prevalence of the disease is dependent on opportunities for the infection of water supplies by persons harbouring the worm. In the affected areas step wells, tanks and other sources of water liable to contamination are responsible for keeping up the infection and the application of lime to such water supplies has been shown to be effective in sterilising them.

CANCER

171. Such evidence as is available seems to suggest that the relative incidence of cancer in India is probably as high as in western countries. As regards the causative factors "whether it be the cervix, the oral cavity, the penis, the skin or the gastro-intestinal tract, the factor of irritation seems to excel all other possible causes and brings the problem of this fell disease within the scope of preventive medicine."

172. Our proposals for the short-term programme are:—

(1) Provision for radium and for deep x-ray treatments should be made, in addition to existing centres for such treatments, at all the hospitals associated with the present medical colleges and with those which will be established during the short-term programme. The centres at which such facilities are now available are shown in Appendix 20 of Volume III of the report.

(2) In addition to the Tata Memorial Cancer Research Hospital at Bombay, three more institutions for promoting advanced research and teaching in the subject are

needed to serve North-Western, Eastern and Southern India respectively.

(3) A considerable extension of diagnostic facilities will be necessary. The laboratories attached to the secondary unit hospitals, the provincial public health laboratory organisation with its regional branches, which we have recommended in the chapter on medical research, and the special institutes referred to above should all help to provide this extended service.

MENTAL DISEASES AND MENTAL DEFICIENCY

173. Conditions of mental ill-health may be divided into two broad groups, (1) mental disorder and (2) mental deficiency. The former may be either inherited or acquired and very often it is both. No age is exempt from mental disorder, although the types may vary at different age periods. A large proportion of these patients is amenable to modern methods of treatment.

174. Mental deficiency is ascribed, on the other hand, to a hereditary or congenital taint or to some accident or illness occurring just before or soon after birth. Although the condition is generally regarded as incurable, by proper care and supervision the majority of defectives can be made to lead useful but segregated lives, and they can also be prevented from becoming criminals and, in the case of girls, social menaces.

175. In England and Wales there were, at the beginning of 1937, about 129,750 patients under treatment in mental hospital, a proportion of 3·2 mental patients per thousand of the population. In America, the annual admission rate has varied from 5 to 8 per thousand in different years and in different States. In India there is no reason to believe that the rate of incidence of mental diseases is in any way less than those for England and the United States. While certain factors which are operative in those countries may not affect India to the same extent, other factors such as chronic starvation or under-nutrition, tropical fevers, anaemias and frequent childbirth in women, who are unfit for motherhood, are responsible for large numbers of mental breakdown in this country. In view of these considerations, even if the proportion of mental patients be taken as 2 per thousand of the population in India, hospital accommodation should be available for at least 800,000 mental patients as against the existing provision of a little over 10,000 beds for the country as a whole. In India the existing number of mental hospital beds is in the ratio of one bed to about 40,000 of the population (taking the present population of the country as 400 millions) while, in England, the corresponding ratio is approximately one bed to 300 of the population.

176. As regards the possible numbers of persons suffering from varying degrees of mental disorder, who may not require hospitalisation and yet should receive treatment, and of those suffering from mental deficiency, it seems almost certain that the numbers are likely to run into several millions in this country, if the rate of incidence in England or America can be taken as even an approximate guide for making estimates for India.

Our Proposals

177. As against this background of mental ill-health the existing provision for the medical care of such patients is altogether inadequate.

and unsatisfactory. We therefore make the following recommendations for the short term programme:—

(a) the creation of mental health organisations as part of the establishments under the Director General of Health Services at the Centre and of the Provincial Directors of Health Services;

(b) the improvement of the existing 17 mental hospitals in British India and the establishment of two new institutions during the first five years and of five more during the next five years;

(c) the provision of facilities for training in mental health for medical men in India and abroad and for ancillary personnel in India and

(d) the establishment of a Department of Mental Health in the proposed All-India Medical Institute.

178. (a) *The creation of mental health organisations as part of the establishments under the Director General of Health Services at the Centre and of the Provincial Directors of Health Services.*—The creation of mental health organisations as part of the establishments of the Director General of Health Services at the Centre and of the Provincial Directors of Health Services is, in our view, of such great importance that we have placed it first among our recommendations. So little information is available regarding the incidence of mental ill-health in the country and the developments in this field of health administration, even in the more progressive countries, are so recent that we feel we shall not be justified in attempting to make detailed recommendations regarding the mental health organisation which the country requires. We must leave this task to the health departments with the guidance of the specialists, whose appointment we have suggested.

179. (b) *The improvement of the existing 17 mental hospitals and the establishment of two new institutions during the first five years and of five more during the next five years.*—Radical improvements should be made in the existing mental hospitals in order to make them conform to modern standards. Provision should also be made for all the newer methods of diagnosis and treatment. Apart from such remodelling of existing mental hospitals we recommend the creation of 7 new institutions during the short-term programme, of which at least two should be established as early as possible during the first five-year period.

180. (c) *The provision of facilities for training in mental health work for medical men in India and abroad and for ancillary personnel in India.*—Nowhere in this country are available all the facilities necessary for the starting of a course for the Diploma in Psychological Medicine. We recommend that, as early as possible, courses of training for this Diploma should be developed in Bombay and Calcutta in association with the universities concerned. We also suggest that, as soon as possible, similar diploma courses should be developed in the universities of other provincial capitals. In the meantime a certain number of carefully selected medical men, with some experience of work in mental hospitals in India, should be sent abroad for training. Provision should be made for sending at least

20 doctors during the first five years and another 20 during the second five years of our programme.

We have also made proposals for developing training facilities for non-medical mental personnel, including such workers as occupational therapists, psychiatric social workers, psychologists, nursing staff and male and female ward attendants.

181. (d) *The establishment of a Department of Mental Health in the proposed All-India Medical Institute.*—This Department is calculated to promote (1) the development of facilities for the undergraduate and postgraduate training of doctors in all branches of psychological medicine and the demonstration to the provincial authorities of the standards to be aimed at when similar facilities are created by these authorities in their own territories, (2) the promotion of research in the field of mental health and (3) participation in the organisation of a mental health programme for the area in which the Institute is located.

ENVIRONMENTAL HYGIENE

182. Under this head we deal with the subjects of (a) town and village planning, (b) housing, rural and urban, (c) water supply, (d) general sanitation, including conservancy and drainage, (e) river and beach pollution, (f) control of insects, rodents and other vectors of disease and (g) control of trades dangerous and offensive to the community.

TOWN AND VILLAGE PLANNING

183. Most of the populated rural and urban centres in the country have grown up in the past without due regard to the principles of planning. In the postwar period new large scale industrial developments, the execution of large public works and other activities will, in all probability, help to create new townships and settlements and thus further the process of urbanisation. It is, therefore, essential to regulate the growth of towns in accordance with the principles of sound town planning, to make a determined effort to eradicate existing slums and to prevent conditions in which they can again grow and thrive.

Our Recommendations

184. (1) A Ministry of Housing and Town and Village Planning should be established in each province as only in this way can the subject receive the attention which it demands. At the centre we are not suggesting the creation of such a Ministry because the direct responsibility for planning and execution will rest with Provincial Governments. But there should be at the Centre an expert in town planning who, for the purpose of administration, may be attached to the establishment of the Director General of Health Services under the Ministry of Health. This officer should be the consultant to other departments of Government such as the Railways and Posts and Telegraphs. All requests from the provinces for financial support from the Centre in respect of their town and country planning schemes should be scrutinised by him from the technical point of view. The Central Directorate of Town and Village Planning should also function as an information bureau for town planners throughout the country.

185. The Provincial Ministry of Housing and Town and Village Planning should have a technical expert as its adviser, who may be called the Director of Town and Village Planning, with suitable subordinate staff under him. All local authorities, improvement trusts, building societies, industrial organisations, private estate development concerns and government departments should submit their schemes for such development or slum clearance, if they come within certain prescribed standards, to the Provincial Ministry of Housing and Town and Village Planning for previous sanction. The Director of Town and Village Planning will be responsible for the technical scrutiny of all these schemes.

Town and Village Planning Legislation

186. Legislation to regulate planning in respect of towns exists in the provinces of Madras, Bombay, the Punjab and the United Provinces. But, as far as we are aware, no such provision exists in respect of rural areas. We consider that legislation should be enacted in all the provinces on a fairly uniform basis and that it should include, within its scope, both urban and rural areas. We therefore suggest that the Central Government should, in consultation with town planning experts, draw up model legislation and recommend its adoption by the provinces or, with their approval, secure the enactment of an all-India measure. In either case, the proposed legislation should include all the requirements that modern conceptions regarding town and village planning would suggest for incorporation.

Planning in Urban and Rural Areas

187. *Large cities.*—In some of the larger and more congested cities in India improvement trusts have been engaged, for some time, in slum clearance and the improvement of housing. The results have not, however, been satisfactory in a number of cases, because cleared areas resulting from costly demolition operations have been allowed to be built over without adequate control. The existing legal and administrative procedure should, where necessary, be so modified as to ensure that such undesirable developments are not permitted to continue. We recommend that improvement trusts should be established in all the larger cities of the country for dealing with slum clearance and rehousing problems. One of the handicaps from which existing improvement trusts suffer is lack of technical assistance. Every trust should be required to employ a town planner on its staff as soon as trained personnel of this class becomes available in sufficient numbers.

188. *Other urban areas.*—The urban areas for which the establishment of improvement trusts is likely to be considered not feasible will, from the point of view of size and importance, be such as to make them suitable for inclusion in the district health organisation we have proposed earlier. The local authority that should be made responsible for the planning of such urban areas should be the District Health Board. This authority should, as in the case of an improvement trust, be required to maintain on its establishment a trained town planner.

189. *Rural areas.*—In the early stages of our programme it will be difficult to extend planning operations into the rural areas as a whole. During this period, attention may be confined to the lay-out

of new villages which may be established as the result of developments in industry, mining, agriculture or the settlement of demobilised personnel. In the case of all new villages, the Provincial Director of Town and Village Planning should be consulted beforehand by the department concerned and he should design the lay-out.

Location of Industry

190. The haphazard location of industries in inhabited areas must be controlled by proper legislation. Legal provision exists in certain provincial Local Self-government Acts for enabling the local authority to regulate their location within their areas. We desire to see adequate provision for controlling the location of industry included in the proposed model legislation for town and village planning. Our suggestion that the lay-out of any new industry should be submitted to the Ministry of Housing and Town and Village Planning for previous approval should also apply to residential accommodation provided for industrial workers. A colony for such workers should not be permitted on a temporary basis for a longer period than three years and, even during this period, adequate provision should be made for such amenities as roads, water, drainage, sanitation and lighting.

Training Facilities for Town Planners

191. We make two recommendations. One is that a certain number of selected individuals should be sent to Europe and America for training in the subject. The other is that town planning experts from abroad should, if necessary, be recruited on short-term contracts and that training centres should be set up at least in a few universities in the country.

HOUSING, RURAL AND URBAN

192. Housing conditions in India present a deplorable picture. The impressions that we gained during our tours indicate extremely unsatisfactory conditions of housing in some rural and urban areas and, in particular, appalling conditions of overcrowding in industrial centres. The single room tenement is a common feature of even many of the more recently constructed housing accommodation in industrial areas. Such tenements often house more than one family and, in any case, have to serve as living room, kitchen and bed room. The sanitation of these dwellings is usually inadequate and of a very rudimentary nature. Thousands of workers have been drawn to these industrial centres by new war industries or by the expansion of old ones, but little attempt has been made to provide the additional accommodation required. The result is that conditions in Calcutta, Bombay, Madras and Cawnpore, to mention only a few cases, are indescribable and intolerable. Thousands are without any home or shelter and have to live and sleep on pavements, verandahs, open spaces, under trees, in cow sheds or in any temporary shelter.

Recent Housing Developments in Western Countries

193. Between the two world wars the provision of adequate housing for the people was recognised in most European countries as an urgent and important social problem and Governments accepted the view that "housing has become a public utility" and that "the right to live in a decent dwelling has taken its place in the "national minima"—the right to good and abundant water, to sanitation, to

adequate fire and police protection, to the use of paved and lighted roads, to education, to a certain amount of medical care, and, in most European countries, to various forms of social insurance". These national housing schemes have certain features which include control by the public authority over housing standards and financial aid directed towards promoting the building of houses of the required quality and in sufficient numbers, and the maintenance of the scales of rent at reasonable levels.

Our Recommendations

194. In India a long-term policy, comprehensive in scope and modern in outlook, is essential for a satisfactory solution of the housing problem. The objective to be attained is the creation of hygienic houses in adequate numbers and of adequate size, in "sanitated" areas equipped with all the facilities necessary for community life. In the execution of the housing programme Governments and public authorities should perform the following functions:—

(i) the planning, execution and regulation of housing programmes, including participation by local authorities and improvement trusts in house construction and maintenance;

(ii) the grant of financial assistance by long-term loans at low rates of interest, or grants-in-aid;

(iii) the prescription and enforcement of standards and

(iv) the promotion of housing research.

195. *Functions of the Provincial Governments.*—Upon Provincial Governments must rest the primary responsibility for dealing with housing and town and village planning. The housing of the people is essentially a State responsibility. It may, of course, be delegated under suitable conditions and in defined areas, to local bodies or public authorities such as improvement trusts. Elsewhere it will be necessary to utilise every available agency if a comprehensive programme is to be planned and executed within a reasonable time. Provincial Governments should consider the establishment of a statutory body, under the direction and control of the Ministry of Housing and Town and Village Planning, with financial resources and power to plan and execute a province-wide house construction and town and village development programme on a 20—30 year plan, in five yearly stages. The Provincial Ministry of Health is deeply concerned in the proper execution of any housing schemes and should be responsible for the control and enforcement of minimum standards in the design and construction, not only of houses but also of environmental amenities, such as water supply, sanitation and recreation. The two Ministries must work in close co-operation with one another and the staff of the Ministry of Health must, at all stages, be in contact with those who are responsible for the execution of housing schemes and town and village planning.

196. *Functions of the Local Authority.*—Our recommendations for provincial and district health administration will, if implemented, establish certain new local authorities in the place of existing ones. We visualise the creation of separate district organisations to deal with health, education, public works and communications, in order to provide more favourable conditions for efficient administration. In

carrying out a province-wide housing and planning policy in urban and rural areas, the work of enforcement of standards, from the health point of view, will fall upon the district health organisation and its officers. On the other hand, the actual construction and maintenance of housing colonies will be carried out by the district agency which deals with public works and which, in this connection, will be under the control of the Ministry of Housing and Town and Village Planning or the authority to which the Ministry has delegated its powers.

197. *Housing standards.*—We have set out certain general recommendations regarding the minimum standards to be prescribed for all houses built under public or private auspices. For details regarding these standards reference may be made to paragraphs 25 to 33 of chapter XIII of Volume II of our report.

198. *Type plans.*—The legal enforcement of housing standards is only one method of approach towards raising the quality of construction. Type plans and estimates covering a considerable range of cost, material and sizes should be prepared. These plans and estimates should be based on local rates of cost, as far as possible, and should incorporate locally procurable material and they should be made readily available to the general public.

Housing for the Lower Income Groups

199. We believe that an India-wide housing programme should give first priority to the needs of the lower income groups of the population. It is not easy to fix an upper limit of income suitable for all provinces. In the South it might be Rs. 100 to 150 a month and in the North Rs. 150 to 250. The limit would have to be fixed by each Provincial Government.

200. *Urban areas.*—In many towns and cities industrial workers live interspersed with the general population and the housing problem must therefore be considered for the community as a whole and not for industrial workers only, bearing in mind the income levels we have suggested for defining the working class population. We believe that future developments in the housing sphere will be regulated on proper lines if such developments are undertaken under public auspices, particularly in the larger urban centres. We have already said that the responsibility for providing houses for the people rests on the Governments of the country. Local authorities and industries should, no doubt, bear their share of the cost, but the State cannot escape the fundamental responsibility.

201. *Rural areas.*—The housing problem in rural areas presents special difficulty. The Governments concerned, through such local authorities as may be suitable, should be responsible for enforcing minimum standards in any new village construction. They should also assist, with finance, advice and example, in the improvement of existing houses in rural areas. Type designs for new houses and suggestions for the improvement of existing ones should be made available to the villagers through the Health and other appropriate Departments. As in the case of housing in urban areas, Governments should be prepared to finance or assist in financing any approved schemes for new housing or housing improvement, whether sponsored by the Governments themselves, by local authorities, by co-operative banks or societies or by private interest. Governments must, however, exercise control over the planning and execution of

such schemes and, in particular, over the rents to be charged for new houses and any increase in the existing rents in the case of housing improvement.

WATER SUPPLY

202. According to the 1939 report of the Public Health Commissioner with the Government of India only 253 towns out of a total of 1,471 towns of all sizes in British India possessed protected water supplies. The population served by these was about 12.7 millions or 48.7 per cent. of the aggregate population of all the towns, but only 4·5 per cent. of the total estimated population of British India in that year.

Rural water supplies are drawn mostly from wells, tanks, rivers and streams and they are almost completely unprotected.

Our Proposals

203. A vigorous policy should be adopted immediately by Governments for the development of a water supply programme, which should aim at providing the entire population under their charge with safe water for drinking and domestic purposes within a period of about 35 years. The initiation of the scheme should not be left to local authorities and sufficient funds should be made available to complete the programme within this period. Technical bodies, which may be designated Central and Provincial Water and Drainage Boards, should be established in order to assist Governments in the planning and execution of water and drainage schemes on a comprehensive scale.

204. *Functions of Water and Drainage Boards, Central and Provincial.*—The Central Board will perform the dual task of carrying out, in the Central Administered Areas, the same duties which the Provincial Board will perform in its own territory as well as of dealing with various matters of interest and importance to more than one province, such as the conservation of water on an all-India basis and inter-provincial problems of drainage and river pollution. In addition, the Central Board will assist the Central Government in carrying out its general policy of promoting co-ordinated effort in the provinces and of giving financial aid and technical advice in the furtherance of their water and drainage schemes.

205. The more important among the functions to be performed by the Central and Provincial Boards in their respective areas include (1) the conservation of the available sources of water in their respective territories and its allocation to the different needs of the community, (2) the general planning of water supply and drainage schemes and the preparation of a priority list in respect of such schemes, (3) various technical matters such as the standards to be prescribed for the purification of water and sewage, the training and registration of water operators and the investigation of special local problems such as the purification of trade wastes, removal of fluorides, etc., and (4) the recommending of grants to the Governments concerned for water and drainage schemes.

Water Conservation on an Inter-provincial Basis

206. The importance of this question was forcibly brought to our notice by the Superintending Engineer, Public Health Engineering Department, the United Provinces. He said "the depletion of the main rivers in this province, particularly the Jumna and the Ganges,

by the wholesale extraction of large quantities of water by the Irrigation Departments of the Punjab and the United Provinces, has had very serious repercussions on the water supply of several large towns in this province, particularly Agra and Cawnpore." He also pointed out that it has aggravated another problem, namely, large scale river pollution from trade wastes.

207. The question of conserving all the available sources of water throughout the country and of so allocating the supply, from a common source, to meet the reasonable demands of individual provinces concerned, is of paramount importance from the standpoint of the health and general welfare of the people and we have come to the conclusion that this matter calls for special consideration. Where an urgent decision on such a matter is required, the Central Government should be empowered to give a temporary decision which should be binding on the provinces concerned, until a final settlement is reached through the award of an Arbitration Board or any other suitable body to which reference should be made with the least practicable delay. We consider that the same procedure should apply to inter-provincial problems of river pollution by trade wastes and sewage. Even when an urgent decision has to be taken by the Central Government we consider it necessary that such decision should be taken only after consulting the Central Water and Drainage Board and the Central Board of Health in regard to the technical and administrative aspects of the question.*

208. As regards the other subjects included under the heading "Environmental hygiene" such as general sanitation, river and beach pollution, control of insects, rodents and other vectors of disease etc., we have set out detailed proposals in the relevant portions of chapter XIV of Volume II. These, if implemented, will, it is anticipated, make for a considerable improvement of the existing unsatisfactory state of affairs.

QUARANTINE

International Quarantine

209. As regards international quarantine two aspects require consideration. One is prevention of the export of infection in respect of the diseases recognised under the International Sanitary Conventions and the other is that of protecting India from the possible introduction of diseases such as yellow fever, sleeping sickness and others from which the country is at present free. In regard to both the measures now enforced in India are considered reasonably complete and satisfactory.

210. The ratification of international treaties should be one among a small group of subjects in respect of which the Centre should be given the power to compel a province to fall in line with the other provinces. The fact that international air lines pass through different provinces in the country necessitates action on common lines in respect of the health requirements of airports and their surrounding

*Mr. P. N. Sapru does not agree with the above recommendations for dealing with these difficult problems. He has dealt with his view in a note which is appended to chapter XIV of Volume II of our report. The views of the rest of the Committee on Mr. Sapru's note will be found in paragraph 22 of the same chapter.

areas and it is therefore essential that the Central Government should be able to carry out a common policy throughout India.

Internal Quarantine

211. Internal quarantine is concerned with the enforcement of measures designed to control the spread of infectious diseases between neighbouring units of administration, namely, the provinces and Indian States. We make the following recommendations:—

212. (1) The Central Government should be responsible for the enforcement of all measures necessary to prevent the inter-provincial spread of infectious disease. In this connection India may well follow the practice which is in existence in the United States of America. In that country "the Federal Health Service has control of sanitation in interstate traffic" including supervision of the sanitary facilities on all interstate vehicles. The Federal Government also assists the States in the control of communicable diseases within their own territories, if desired to do so. The Central Government in this country should be similarly empowered to control the inter-provincial spread of epidemic diseases.

213. (2) The Central Board of Health should draw up, in consultation with the health advisers at the Centre and in the Provinces, a memorandum of instructions to be followed by the Central and Provincial health departments in order to promote the effective control of the spread of infectious diseases. The whole field of possible co-operation should be examined on a wide basis and a common programme of action drawn up under the auspices of the Board.

214. (3) The desirablity of creating an inter-provincial fund for carrying out the measures outlined above should be considered, the Central and Provincial Governments making their contributions to this fund on some agreed basis. Such a fund will also constitute an insurance for all Governments against possible disasters such as famines, floods and earthquakes.

215. (4) The measures described above for the enforcement of internal quarantine can hardly be effective without the active participation of Indian States. Such participation can be of value only if those States possess a reasonably good health organisation. The more important of the States probably satisfy this condition. If, in the beginning, even these can be brought into the scheme by mutual arrangements between British India and the States, the range of activity of the internal quarantine organisation and its effectiveness will have been greatly increased.

VITAL STATISTICS

216. Errors in existing vital statistics in India fall under three heads, (1) incompleteness in the recording of the events, (2) inaccuracy of the registered cause of death and (3) faulty compilation. Registration of vital statistics in all municipalities is, generally speaking, a function of the municipal public health department. In the rural areas, in most provinces the Registrar is the police officer in charge of the *thana* (police station) and the person responsible for reporting births, deaths and cases of notifiable diseases from individual villages is the *chowkidar*, who is perhaps the lowest grade of public servant and is generally illiterate. In the province of Madras the Registrar is the headman of each village.

217. The recorded vital statistics are passed on, through a series of officers, to the Director of Public Health in each province. Compilation of the data is carried out at the different stages of transmission. Madras forms an exception to this general statement. Here the number of intermediary stages has been reduced, the village headman passing on his report to the *Tahsildar* of the *taluk* in which the village is situated and the latter sending it directly to the Director of Public Health. Compilation of the data for the whole province has been centralised in the office of the latter officer. This system has been found to be satisfactory and has been recommended to other provinces by the Central Advisory Board of Health.

RECOMMENDATIONS

The Areas served by our short-term Programme

218. *The creation of four registration offices in each primary unit.*—The placing of the registering authority as close as possible to the people is desirable in order to improve vital statistics. We therefore recommend the establishment of four registration offices in each primary unit, one of these being at the headquarters of the unit. The public health nurses and midwives should be made Registrars of Births and Deaths and should be responsible for ensuring that these offices are kept open on the required dates and during the stated hours.

219. All the members of the public health staff employed in the primary unit should systematically check the birth and death registers by house to house enquiry, when they visit villages on their routine duties. In addition, we anticipate that the village committees we have suggested will help to bring on record events which might escape the notice of the *chowkidar* as well as to awaken, in the villagers, a sense of personal responsibility in regard to registration.

The Areas outside our Short-term Programme

220 We recommend the employment of non-medical personnel, with some elementary type of training, as Registrars in the areas to which our health programme is not extended. Each man's range of jurisdiction should be limited to such a number of villages as would enable him to visit all of them within a period of about 6 days. During three days in the week he should attend the registration office and the remaining days should be devoted to an inspection of the work of the *chowkidars* in the villages within his area.

Certain Other Proposals

221. (a) *House lists in villages and sample surveys.*—We recommend the preparation and maintenance of house lists for individual villages. The list should contain information regarding the name, date of birth and sex of the head of the family and of every normal resident of the house. It should be made obligatory on the householder to give the information required for the filling of the house list, should he be asked by the appropriate authority to do so.

In a subcontinent like India the use of the sampling method is eminently suitable for the collection of demographic information of various types and the provision of an accurate house list for each village will prove invaluable for sample surveys.

222. (b) *The provision of adequate incentive to the people for the registration of births and deaths.*—An effective method of stimulating interest in the people for the registration of vital statistics will be

by creating conditions requiring, in an increasing degree, the production of proof of age, community, parentage etc. If courts, schools etc. could be induced to insist on the production of birth and death certificates the public will begin to feel the necessity for registering births and deaths in their own interest.

223. (c) *Compulsory registration of vital statistics.*—In the areas in which our scheme will be introduced registration of vital statistics should be made compulsory along with the introduction of the scheme, wherever such provision does not already exist. In other areas compulsion should be introduced gradually. The enforcement of the law through the prosecution of offenders is essential if definite improvement is to be secured.

Administrative Organisation

224. *The central organisation.*—We recommend the appointment of an officer with the title of Registrar General of Vital and Population Statistics. He will be attached to the Central Ministry of Health and will be responsible for the collection, compilation, study and publication of vital statistics from all parts of the country, for the carrying out of the census at periodical intervals and for continuous population studies. He will work independently of the Central Health Department but in close co-operation with it. He should publish an annual report on the population of India incorporating such information as is available regarding existing conditions and possible tendencies for the future.

A "medical section" should be created in the Registrar General's office for the purpose of providing statistical help to the Central Health Department in its day to day administration and in the carrying out of special investigations.

225. *The provincial organisation.*—The provincial statistical organisation should correspond to that proposed for the Centre and the functions of the provincial officer in charge should be similar to those of the Registrar General. The designation of the provincial officer may be the Provincial Registrar of Vital and Population Statistics. He should be attached to the Provincial Ministry of Health for administrative control and should work independently of, but in close co-operation with, the Director of Health Services.

The provision of "a medical section" in the office of the Provincial Registrar for the same functions as those suggested in connection with the Central Health Department is also necessary.

We have also made suitable recommendations for a district vital statistics organisation, which will work under the control of the Provincial Registrar.

226. The employment of statisticians in increasing numbers will become necessary in the vital statistics, health and other departments of Government. Industry is also likely to employ a growing number of persons trained in modern statistical methods. In the circumstances we recommend the development of facilities for statistical training of a high order in the universities and in certain other centres.

PROFESSIONAL EDUCATION

227. Our main object during the short-term programme should be the provision of adequate numbers of trained staff in all categories, in order to facilitate the development of our health programme with the least possible delay. Before indicating briefly our proposals for the expansion of existing provision for professional education in the

field of health, we may consider certain general questions which are relevant to the subject.

The Target in regard to the Production of Doctors

228. We have placed the target, at the end of the first ten years of the programme, in regard to the production of doctors at an annual output of 4,000 to 4,500 as compared with less than half that number of graduates and licentiates combined now being produced each year. To man the new medical colleges with suitable teaching personnel we anticipate that the All-India Medical Institute, the establishment of which we are recommending, will provide a steady, if limited, stream of teachers of the highest quality. In addition we have suggested that at least 200 carefully selected persons should be sent for overseas training in order to equip themselves for filling teaching posts in the country.

The Type of Doctor for the Future

229. Having given serious consideration to the suggestion that, in the conditions now prevailing in the country, it might be desirable to provide both fully trained doctors and a less elaborate type of medical man, the conclusion which the majority of us arrived at is that, having regard to the limited resources available for the training of doctors, it would be to the greater ultimate benefit of the country if these resources were concentrated on the production of only one and that the highly trained type of physician whom we have termed the "basic" doctor.*

Admission to Medical Colleges

230. We feel that, as far as possible, the applicants best qualified to make use of the opportunities provided should be admitted into

*Six of our colleagues (Sir Frederick James, Dr. Vishwa Nath, Messrs. Sapru and Joshi, Pandit Maitra and Dr. Butt) agreed to the advantage of having one single type of medical practitioner, but in view of the overall shortage of doctors, felt that the early realisation of this ideal must be sacrificed to the immediate needs of the country. In their view the imperative and fundamental need in India was the large scale production of trained medical personnel of all kinds and to that end were prepared to use every possible means, including the adoption of a shorter licentiate course to increase, both rapidly and substantially, such personnel.

The majority view, while recognising the need for as rapid an expansion of medical personnel as possible, has taken note of the fact that the "basic" doctor will receive adequate training in the community and preventive aspects of medicine and that he will, therefore, be much better equipped for fulfilling the functions which have been proposed for a medical officer in our programme than a licentiate with his more limited background of general education and of professional training. Moreover, the "basic" doctor, supported by adequate and efficient technicians and other ancillary personnel, is capable of extending his sphere of public utility to an extent which would be beyond the capacity of a less efficiently trained person. It seems therefore likely that the anticipated advantage from a larger out-turn of doctors by the continuance of the licentiate course will be largely counterbalanced by the more efficient and extended service which the 'basic' doctor will be able to provide. It is also considered that the production of two types of doctors is to be deprecated on general grounds, because the person with a lower status naturally tends to develop an inferiority complex and a chronic discontent which cannot but be innimical to good work.

A separate note favouring the continuance of licentiate teaching by Drs. Vishwa Nath and A. H. Butt is given in Chapter XVIII of Volume II of the report. On the other hand, three other members (Drs. Amesur, Narayanrao and Wadhwani) consider that admissions to medical schools must be stopped forthwith and that such medical schools as can be up-graded should be converted into colleges even before improvements to existing colleges are carried out. Their note will also be found at the same place in chapter XVIII.

the medical colleges. We realise that there are factors which militate against the application of this principle in its entirety and that communal considerations cannot perhaps be ignored in the present state of the country. We suggest that one-third of the admissions to every medical training institution should be by pure merit and that the remaining seats may be divided among all the communities, provided the best candidates from each community are selected.

231. In view of the importance of increasing to a large extent the number of women doctors in the country we recommend that about a quarter to a third of the admissions in the medical colleges should be reserved for suitable women candidates, if they are available.

Stipends to Medical and Nursing Students

232. In Russia medical education is free and in the United Kingdom, the Goodenough Committee has recommended that one-third of the admissions to medical schools should be free. In order to prevent economic barriers standing in the way of suitable persons entering the medical profession we would like to see that all those, who are willing to enter the public service after successfully completing their course, should be given an annual stipend of Rs. 1,000, a part of its being recovered from them later in easy instalments. In view, however, of the large financial outlay that this proposal involves we have included, in our estimates, provision only for 50 per cent. of the entrants.

The need for nurses is even greater than that for doctors, there being probably no more than 7,000 registered nurses at present in the country as a whole. On the other hand the implementation of our short-term programme will require approximately 80,000 nurses. We have suggested the provision of a stipend of Rs. 60 per month for pupil nurses, a part of the amount thus advanced being eventually recovered from them in easy instalments.

MEDICAL EDUCATION

Undergraduate Education

233. Considerable thought has been given by us to the type of training necessary for the evolution of the "basic" doctor and advice was sought from a strong and representative panel of experts in the field of medical education from different parts of the country.* The main ideas underlying the changes recommended in the undergraduate curriculum include a reorganisation of the teaching both in the pre-clinical and clinical fields; a reduction in the hours of didactic instruction in certain subjects and an emphasis on the inclusion of principles and methods which will enable the student to learn for himself, think, observe and draw conclusions; the establishment, in every medical college, of a Department of Preventive and Social Medicine so as to give the student an insight into social health problems by contacts with home and community life and the inclusion of a year of "internship" after the qualifying examination, of which three months will be devoted to work in a public health unit and the remaining period in a hospital of approved standard. Throughout the whole course, the importance of research should be stressed and whole-time teachers should themselves engage in research and

*For detailed information regarding our proposals reference should be made to the relevant sections in Chapter XVIII of Volume II of the report

encourage any student showing an aptitude or leaning towards this important aspect of his work to participate in research.

234. Our programme of expansion of educational facilities includes the improvement of existing colleges, the conversion of suitable medical schools into colleges and the establishment of new colleges in different parts of the country.

Postgraduate Education

235. Postgraduate education should be devised to meet two different needs. They are, (a) the training of consultants and specialists and (b) the training of practitioners desirous of practising a speciality without the definite status of a specialist. In the case of (a) such training will naturally involve several years of work in special departments and hospitals and lead to a higher qualification such as the M.D. or M.S. In the case of (b), the training in the speciality concerned may range from 12 to 18 months under suitable guidance. We recommend that courses should be available in (i) Oto-Rhino-Laryngology, (ii) Dermatology, (iii) Radiology, diagnostic and therapeutic, (iv) Ophthalmology, (v) Obstetrics and Gynaecology, (vi) Venereology, (vii) Anaesthesia, (viii) Psychiatry, (ix) Pediatrics, (x) Tuberculosis, (xi) Malariology, (xii) Blood transfusion and resuscitation and (xiii) Orthopaedics.

236. We have suggested the establishment of a special organisation, the Central Committee for Postgraduate Medical Education, to be responsible for laying down standards in respect of postgraduate training in particular subjects and for promoting the development of facilities for such education in different parts of the country on a co-ordinated basis. We have also made suggestions for the apportionment of cost of such institutions between the Central and Provincial Governments.

Refresher Courses for General Practitioners

237. One of the most serious handicaps in raising the general standard of medical practice in India is the absence of any provision for refresher courses. There are several lines along which refresher courses may be arranged.

(i) Whole-time refresher courses which may extend from two weeks to two months. It is desirable to encourage short-term courses of two to four weeks, as many medical men may not find it practicable to be away from their duties for longer periods.

(ii) Part-time courses which may be—

(a) week-end courses
(b) whole-day courses
(c) half-day courses

} spread over weeks or months organised on a systematic basis.

(iii) One educational session once a week or fortnight conducted throughout the year.

(iv) Short-term posts in a recognised hospital for periods ranging from one month to three months.

We recommend that facilities for refresher courses should be developed in all hospitals attached to the secondary health centres, district health centres, medical colleges and the headquarters of each province.

238. We have also made recommendations regarding the provision of training facilities in tuberculosis, mental hygiene and dietetics.

Special Provision for Licentiates

239. There are two types of training that may be given, (1) training which will enable licentiates to obtain a university degree and (2) advanced training in the specialities.

240. (1) *Courses leading to degree qualification.*—The All-India Medical Council has suggested certain changes which some universities have accepted, the result of which will be that the licentiate can within 18 to 24 months obtain the degree of M.B.B.S. Special concessions to those who were serving in the armed forces so that they may, after demobilisation, proceed to a degree have also been recommended. We suggest that it should be the endeavour of every university and every medical college to reserve a sufficient number of places for licentiates so as to enlarge substantially their opportunities to obtain a medical degree.

241. (2) *Advanced training for licentiates.*—There are at present only a few centres where such training can be obtained by licentiates, the School of Tropical Medicine, Calcutta, and the All-India Institute of Hygiene and Public Health being two institutions which afford opportunities for them to acquire their diplomas. It is also understood that the Government of Madras have introduced special courses in Ophthalmology, Obstetrics and Gynaecology, Tuberculosis and Clinical Laboratory Sciences for licentiates. Such diplomas should be made more freely available to them by other authorities in different parts of the country.

DENTAL EDUCATION

242. We suggest that provision should be made for the training of three types of dental personnel, (1) the dental surgeon, (2) the dental hygienist and (3) the dental mechanic. The responsibility for the training of the dental surgeon will have to be shared between medical and dental colleges, while the training of the other two classes can be undertaken entirely by the dental colleges. In view of the difficulty in obtaining well trained dental teachers during our short-term programme, the number of dental colleges that we propose should be opened in the country is limited. We recommend that dental colleges should be established at Calcutta, Bombay, Madras, Lucknow and Patna and that the dental college at Lahore should be expanded. Each dental college for postgraduate students should be associated with a medical college so that the teachers of the latter can assume responsibility for the instruction of dental students in those subjects which form part of the normal studies of the undergraduate in medicine.

Postgraduate Dental Education

243. Appointments as "house surgeons" should be instituted in all dental hospitals run in conjunction with the medical colleges so that dental training on a salaried basis may be available for graduates. In view of the present shortage of teachers, graduates in dentistry should be encouraged to proceed to a higher degree and provision for this should be made in all universities by the establishment of the degree of Master of Dental Surgery. As a temporary measure dental

graduates should be encouraged to proceed overseas to obtain higher qualifications as well as pursue training in special subjects.

Dental Legislation

244. Dentistry as a science can make little progress in the country until it is upheld by suitable legislation directed to compulsory registration and prohibition of practice by unregistered persons. Instead of each province having its own Dental Act, it is suggested that comprehensive all-India dental legislation should be enacted.*

PHARMACEUTICAL EDUCATION

245. We consider it necessary to provide educational facilities for three classes of personnel, (1) licentiate pharmacists, (2) graduate pharmacists and (3) pharmaceutical technologists. The first class is intended to provide for the large number engaged in dispensing work in chemists' shops, dispensaries and hospitals. The course for the graduate pharmacist will be designed to train the smaller number who will be engaged in manufacturing concerns, analytical laboratories and educational medical institutions. The third type of course is for those desiring to take up the manufacture of pharmaceuticals and drugs on a commercial scale. For them there should be, in addition to the graduate course in pharmacy, an additional course of one year in chemical technology, design, equipment, etc.

As soon as pharmaceutical licentiates become available in sufficient numbers the training of compounders should be dispensed with.

EDUCATION OF PUBLIC HEALTH PERSONNEL

Medical Men

246. We have already referred to the setting up in medical colleges of adequately staffed and equipped Departments of Preventive and Social Medicine and the inclusion of a reasonably high standard of training in this important branch of medicine in the curriculum of the undergraduate medical student. The postgraduate training now provided through the Diploma in Public Health will, we believe, largely be incorporated in the future in the course of training for the undergraduate. Postgraduate training in preventive and social medicine will then have, as its objective, the provision of facilities for advanced training in such branches of the subject as malariology, maternity and child welfare, industrial hygiene, public health administration, epidemiology, public health laboratory practice and statistics. Such specialised training may be of two types. The first will be of a limited character and will have as its purpose the equipment of health workers with a reasonable measure of proficiency in the subject concerned, the course of instruction ranging ordinarily from 3 months to one year. The second will be for those who desire to attain the status of specialists in preventive health work. For them the period of training will be from 3 to 5 years, the candidates being attached to the Preventive and Social Medicine Department of a medical college and being associated more and more with the

*Mr. N. M. Joshi is, however, of the view that such legislation is premature and that, if it be passed, it should not be made applicable to those areas where the services of a registered dentist are not available within a reasonable distance.

teaching, research and administrative activities of that department, including participation in the field training given to students.

Public Health Engineers and others

247. Our proposals for postwar health development require a large number of qualified public health engineers for the tackling of the problems of environmental hygiene. A beginning in training can be made at the All-India Institute of Hygiene and Public Health, Calcutta, in collaboration with the Bengal Engineering College and the Calcutta University. At a later stage it is proposed that this subject should occupy a definite place in the course of studies provided at the different engineering colleges so that instruction in public health engineering should form a part of the qualification of all engineers. We have also set out proposals for the training of public health inspectors and public health laboratory workers.

THE TRAINING OF NURSES, MIDWIVES AND DAIS

248. The conditions under which nurses have been required to carry on their profession in the country are deplorable. These include lack of professional status, insufficient pay for senior positions, gross under-staffing in hospitals and consequent overwork, deplorable living conditions accompanied by overcrowding and lack of recreational and cultural facilities as well as absence of provision for general superannuation or pension schemes.

249. The number of nurses available in the country is probably about 7,000, while our short-term programme will itself require about 80,000 nurses. Without a considerable increase in their number it is impossible to proceed with the development of hospital and other institutional facilities and with the organisation of the public health nursing service for curative and preventive work in the homes of the people. In Chapter I of Volume I of our report we have suggested that, by 1971, the number of trained nurses available in the country should be raised to 740,000. An essential step towards the achievement of this objective is the removal of the existing unsatisfactory conditions of training and service and we have made proposals designed to remove these conditions.

250. The very large majority of nurses who pass out of nursing schools will be absorbed in the public health services. Even so, there would remain a certain number outside this service. We have in mind such nursing services as are maintained by private bodies including Missions. For those who are in public service, provision for old age and insurance against illness, illhealth and disability will form part of the conditions of their service. We would suggest that, for those who are employed by private bodies, provision should be made through a scheme corresponding to the "Contributory Federated Superannuation Scheme for nurses and Hospital Officers" which was introduced in Great Britain in 1928 and has been, it is understood, functioning satisfactorily.

251. As regards training facilities our proposals include the establishment of preliminary training schools which will give elementary instruction to students who wish to become nurses, midwives, public health nurses and hospital social workers as well as the establishment of successive groups of training centres for nurses. In view of the extreme shortage of nursing personnel we have recommended that

the first group of 100 training centres, each taking 50 pupils, should be started two years before the health organisation begins to be established, that another set of 100 centres should be created during the first two years of the scheme and that a third group of the same number of centres should be established before the third year of the second quinquennium.

251. (a) We have suggested that there should be two grades in the nursing profession with corresponding types of training, a junior grade and a senior grade. The entrance qualification for the former should be, we have suggested, a completed course for the middle school standard and for the latter a completed course for the matriculation.

252. We have also recommended the establishment of nursing colleges in order to provide a five-year degree course in nursing as well as advanced courses in hospital nursing administration, in the teaching of nurses and the training of public health supervisors.

Male Nurses

253. Owing to the existing social conditions and customs in certain parts of India, male nurses will have to play an important part in the health programme. Male nurses and male staff nurses should be trained and employed in large numbers in the male wards and male outpatient departments of public hospitals, thus releasing women workers for other work.

Public Health Nurses

254. We have also made specific proposals in regard to the training of public health nurses. They are fully qualified nurses with training in midwifery also. In addition their educational programme should stress, throughout, the preventive point of view. The curriculum should integrate class room instruction in the science and art of nursing and in social studies with well-planned experience in hospitals, community health services and in the home.

Midwives

255. The number of midwives actually available for midwifery duties in the country is probably 5,000. In order to provide one midwife for every 100 births, approximately 20 times that number or 100,000 midwives will be required for British India.

256. Existing training schools for midwives require considerable improvement. The most serious drawbacks are (1) lack of properly trained and well equipped supervisory staff, (2) lack of facilities for antenatal and postnatal work, (3) lack of domiciliary practice and (4) lack of opportunities for witnessing complicated cases of labour. We have laid down certain fundamental requirements which should be met before an institution is recognised as a training centre for midwives and have also made detailed recommendations for their training courses.

Dais

257. The continued employment of these women will, for a period, be inevitable. While recognising that attempts to train the *dai* and make her reasonably satisfactory in the practice of midwifery have in many cases failed, the discrepancy between the existing number of midwives and that required to meet the needs of the country is so great that, as an interim measure, the possibility of elaborating

a system of training whereby the most effective use might be secured out of this type of personnel cannot be ignored. We have described in some detail the experience that one of us (General Hance) has had in developing a midwifery service through trained *dais* in the North-West Frontier Province, where the scheme achieved a reasonable measure of success. We also understand from another member of our Committee (Dr. Butt) that attempts to improve the normal practice of midwifery by *dais* through suitable training have been equally successful in the Punjab. We have, in the circumstances, advocated the training of *dais* as an interim measure until an adequate number of midwives will become available and have made certain suggestions for their training for urban and rural practice.

MEDICAL RESEARCH

Existing Medical Research Activities

258. Organised medical research at the present time depends mainly on two organisations (1) the Central and Provincial Government Laboratories and the Medical Research Department and (2) the Indian Research Fund Association. The more important institutes and laboratories existing in the country for the promotion of medical research are shown below:—

(1) The Central Research Institute, Kasauli, (2) The Haffkine Institute, Bombay, (3) The King Institute, Guindy, Madras, (4) The Pasteur Institute of South India, Coonoor, (5) The Pasteur and Medical Research Institute, Shillong, (6) The School of Tropical Medicine, Calcutta, (7) The All-India Institute of Hygiene and Public Health, Calcutta, (8) The Malaria Institute of India, Delhi, and (9) The Nutrition Research Laboratories, Coonoor.

259. Of these, the Central Research Institute, the All-India Institute of Hygiene and Public Health and the Malaria Institute of India are maintained by the Central Government, the Nutrition Research Laboratories by the Indian Research Fund Association and the other institutions, with the exception of the Pasteur Institute of South India, by the Provincial Governments concerned. The last is the property of the Pasteur Institute Association, a body registered under the Societies Registration Act of 1860, and its management is vested in a Central Committee of which the Surgeon General with the Government of Madras is the Chairman and the Director of the Institute is the Secretary. For information regarding the development of these research laboratories and the work that has been accomplished by them, reference should be made to Chapter XIV of Volume I of our report.

The Medical Research Department

260. The medical research department was established by the Government of India for the provision of a permanent cadre of specially selected and trained officers for the furtherence of research. With the creation of Central and Provincial Government laboratories the officers of this department were appointed as Directors and Assistant Directors of the various Government laboratories. More recently, however, the extended activities of the provincial laboratories have necessitated the employment of workers for special duties and they have been appointed, as required, without drawing upon the medical research department. Officers of the latter department have been

placed on foreign service, from time to time, with other organisations such as the Indian Research Fund Association and the Pasteur Institute Association.

The Indian Research Fund Association

261. The Indian Research Fund Association is a registered association in close touch with the Government of India, from which its funds have been mainly derived. The chief objects of the Association are (1) to initiate, aid, develop and co-ordinate medical scientific research in India, to promote special enquiries and to assist institutions for the study of diseases, their prevention, causation and remedy; (2) to publish papers or periodicals in furtherence of the objects of the Association and (3) to propagate knowledge regarding the causation, mode of spread and prevention of diseases. The entire control and management of the affairs of the Association are vested in a Governing Body, its President being the Hon'ble Member in charge of Health in the Governor General's Executive Council and its Secretary the Public Health Commissioner with the Government of India. The Governing Body appoints a Scientific Advisory Board to advise on technical matters and on allocation of funds, the Chairman of which is the Director General, Indian Medical Service, and the Secretary the Public Health Commissioner. The Association approves an annual programme of research, sanctions grants-in-aid of research and, in certain cases, may constitute special enquiries. An annual conference of medical research workers is normally held, at which the work of the past year is reviewed and proposals for the coming year are put forward.

RECOMMENDATIONS

262. We recommend the constitution of a statutory organisation consisting of:—

(1) a Scientific Board, which will be the executive machinery of the organisation and

(2) an Administrative Body which would form the link between the Board and the Government of India and exercise general supervision over the working of the organisation.

The Scientific Board

263. The composition of the Board should include medical research workers of standing and experience, representatives of universities and medical colleges, representatives of the principal scientific bodies in India, prominent workers in the field of public health and clinical medicine, non-medical representatives of allied and fundamental sciences and persons with experience of health administration. The work of the Board should be aided by the formation of an adequate number of expert advisory bodies for special subjects.

Administrative Body

264. The Administrative Body should have the following type of membership:—

(a) the Minister of Health in the Central Government; (b) representatives of the Government Departments of Agriculture, Industry, Labour and Finance; (c) one representative of the Council of State-

and (d) two representatives of the Legislative Assembly. The Director General of Health Services with the Government of India should be in attendance at all meetings of this body.

The Board would make recommendations regarding the allocation of funds for the furtherance of research to the Administrative Body, in which would be vested the power of giving sanction to such allocations.

265. The main functions of the central medical research organisation proposed above should be (1) the formulation of policy in regard to the future development of medical research in India, (2) stimulation of research activities in the provinces, universities and medical colleges and (3) co-ordination of such research activities throughout the country.

266. Our recommendations deal also with future developments in respect of Government research institutes and teaching institutions. In addition we have suggested the provision of improved laboratory services in the different provinces through the creation of regional laboratories, to be linked locally with other organisations in connection with the health programme and, for technical direction, with the central laboratory at the headquarters of the province. We have also made suggestions regarding the development of research in special subjects such as malaria and nutrition. Investigation into the social and environmental factors affecting health and disease has also been suggested. For information regarding these matters reference should be made to Chapter XIX of Volume II of our report.

The Recruitment and Training of Medical Research Workers

267. The number of suitable medical research workers and facilities for training them are inadequate at present in India and, before any expansion of medical research on a reasonable scale can be undertaken, the primary requirement will be a great increase in the number of properly trained workers. Responsibility for recruiting medical research workers and for the creation of training centres for them must be the primary function of the central organisation for medical research referred to above and we have made certain specific recommendations in this behalf also

The Manufacture of Biological Products

268. One of the activities of Government laboratories is the manufacture of biological products such as vaccines and sera, mainly for the use of Public Health Departments. While recognising that the preparation of these products by commercial firms in India is an industry which is now well established and has been making rapid progress, the majority of us consider that the large scale production of basic prophylactics such as cholera, plague, TAB vaccines, vaccine lymph and anti-rabic vaccine is of paramount importance to the public health authorities in India in protecting the people against epidemics and that their production should therefore remain a Government responsibility.*

*Drs. Vishwa Nath and Butt are of the opinion that the time has now arrived when the manufacture of such products should be a responsibility of commercial firms under sufficiently strict Government inspection to ensure public safety. Their views are expressed in a note on medical research, which has been appended to Chapter XIX of Volume II of the report.

ALL-INDIA MEDICAL INSTITUTE

269. Our recommendations in the section dealing with professional education are intended to promote the production of health personnel under the different categories; in as large numbers and as rapidly as possible. Side by side with these developments, however, we consider it of the first importance that at least a few institutions, which will concentrate on quality, should also be established in suitable centres in different parts of the country. In the first place we recommend the establishment of one such training centre for which we would suggest the designation, All-India Medical Institute. The objects of the Institute should be (1) to bring together in one place educational facilities of the very highest order for the training of all the more important types of health personnel and to emphasise the close interrelation which exists between the different branches of professional education in the field of health; (2) to promote research of the highest type in all the branches of study for which the Institute will be responsible; (3) to co-ordinate training and research; (4) to provide postgraduate training of an advanced character in an atmosphere which will foster the true scientific outlook and a spirit of initiative; (5) to inspire all persons who undergo training, undergraduate or postgraduate, with the high ideals of the profession to which they belong and (6) to promote in them a community outlook and a high degree of culture, in order that they may become active apostles of the progressive spirit in whatever field they may be called upon to serve, whether it be teaching, research, general health work or administration. Though the *alumni* of such an Institute may not be numerous, we feel confident that the influence which they will exert in their respective spheres will be out of all proportion to their numbers.

We recommend that the Central Government should be responsible for its establishment and maintenance.

The Range of the Institute's Activity

270. We suggest that, in the beginning, the Institute should aim at providing only medical training in all its branches and also the training of nurses. The Institute must therefore have, as an integral part of it, a medical college with its teaching hospitals and laboratories as well as a college to provide the highest type of nursing education. Later on provision should be made for the training of all the higher types of health workers.

The Selection of Students

271. The students to be admitted to the medical and nursing colleges attached to the Institute should be selected very carefully, merit being the sole criterion for admission. As the needs of the country as a whole are to be served, applicants from all parts of India should be eligible for admission.

Organisation and Control

272. The organisation and control of the Institute should cover (1) the administrative field and (2) the technical and scientific field

The administrative field.—An institution of the type we envisage should have freedom to develop its own activities independently and without the delaying and hampering effect that strict governmental control may entail. We therefore propose that its administration

should be vested, from the time of its inauguration, in a Governing Body of suitable composition.

The technical and scientific field.—Although it may appear somewhat novel in this country, we suggest that the technical work of the Institute should be developed and directed not by an outside body, however eminent its members may be, which will impose its ideas on the Director and Professors of the Institute but the latter themselves acting as a medical faculty. In making this recommendation we are not putting forward a procedure without precedent. We understand that, in the Johns Hopkins Medical School, a similar arrangement has worked successfully for many years and that it has contributed materially to the attainment, by that institution, of the pre-eminent position it holds in the world of medical education. We also understand that this system generally prevails in the United States.

Recruitment of the Staff

273. Our recommendations in connection with the recruitment of the health services, which have been set out earlier, apply generally to the recruitment of the staff of the Institute also. As regards procedure, however, a departure seems desirable from our suggestion that recruitment to the different health services should be made through the various Public Service Commissions. We feel that the adoption of the procedure, which has been practised in the Johns Hopkins University and which we understand is generally followed in other universities in the United States, may with advantage be tried here. In the Johns Hopkins Medical School recommendations for the appointment of professors are made by the medical faculty of that institution, which consists of its own professors. While the authority for making the appointment is vested in the university, it is understood that the recommendation of the medical faculty is invariably accepted. We desire to see this principle adopted for the recruitment of the staff of the Institute, the Governing Body being the appointing authority and the Medical Faculty the recommending body.

Finance

274. We consider that the Central Government should fulfil adequately the responsibility of financing the Institute on a sufficiently generous scale to promote its development into, and maintenance as, an all-India training centre on the lines indicated by us. An appeal should, however, be made to the public for contributions. The Institute is of such paramount importance for the full development of the proposed national health programme that its financial stability should be ensured by the Government of India endowing it with an amount sufficient to secure, through the accruing interest, at least half the estimated annual expenditure of the institution in its fully developed form and by a statutory provision for any balance that private benefactions may fail to provide.*

HEALTH ORGANISATION FOR DELHI PROVINCE

275. The Central Government should attempt to demonstrate in Delhi Province the effects of implementing not only our proposals

*Mr. P. N. Sapru and Dr. Hameed do not agree with the rest of the Committee on a few points. Their note is appended to chapter XX of volume II of the report.

but also those put forward by other committees, which have made recommendations for postwar development in different fields of community life. The purpose in view is to demonstrate to the country as a whole what can be achieved, through co-ordinated effort, to improve the health and general prosperity of the community.

Our Proposals

276. While our proposals for the health organisation in Delhi Province follow the main outlines of the general plan suggested for the country as a whole, there are modifications in certain directions. These are designed to secure a higher level of efficiency in the proposed health service, in view of Delhi being a demonstration centre for the country as a whole. For instance, a rural primary unit in this province will have only a population of 20,000 as against double that number which has been suggested for the rest of the country. The proposed provision for medical relief will be higher in Delhi Province than that suggested by us in other provinces. The dispensary at the headquarters of the primary unit will have five emergency beds as against two elsewhere, while the 30-bed hospital will serve in Delhi a population of 60,000 as against 160,000 in the rest of the country. In view of the limited number of women doctors available in India, our proposals for the appointment of a woman doctor to each primary unit may not be possible of being carried out in the country as a whole in the early stages of the programme. It should, however, be possible for Delhi Province to secure women doctors for the relatively smaller number of such units which will be developed here. In proportion to the population Delhi will have double the number of midwives and trained *dais* in each primary unit as compared with the rest of the country. Thus health work among women and children should be capable of development here on a more effective basis than in the other provinces.

DRUGS AND MEDICAL REQUISITES

Supplies

277. Second in importance only to the provision of trained health personnel must come the supply of the therapeutic substances and medical appliances without which doctors and public health workers generally may be reduced to a stage of virtual impotency in the practical exercise of their profession. We have had evidence to show how grave has been the lack in this country of these essentials. Even when they are available, the cost in respect of some is so high as to prohibit or at least gravely restrict their use. Quinine may be cited as an example. We are told that, in the year 1935-36, the actual cost of producing quinine in Bengal from home grown bark was about Rs. 6/8/- a pound, while the Government selling price of this article was Rs. 18 and the market rate Rs. 22 a pound. This market rate was largely decided by an international organisation, Kina Bureau, which controlled about 95 per cent. of world's supply of quinine. Nor can the indigenous profiteer be absolved from the charge of criminal exploitation. We feel that such a state of affairs should not be permitted to continue and that it calls for immediate attention and remedy.

278. We recommend that a small committee, mainly but not entirely technical in composition, should be appointed to examine the question of the requirements of the country in respect of drugs and

other medical requisites. The following are some of the more important matters which it should investigate:—

(a) What are the drugs and other medical requisites essential for general use in the country?

(b) What practical steps should be taken to ensure their manufacture in the country in sufficient quantities and their sale at a price which will make them available to all who need them?

(c) What are the circumstances which would justify the conclusion that the manufacture of any of these in the country is inadvisable?

(d) What should be the respective fields of Government and of private enterprise in the manufacture of these requirements?

(e) What aid and assistance should be given to private agencies in such cases and under what conditions?

(f) What machinery should be established to develop research regarding drugs and other medical requisites and their production in India and to ensure the continuity and co-ordination of such research?

(g) What machinery should be set up to ensure a steady flow of trained technical personnel?

279. We believe that it should be possible adequately to provide for these essential needs through a combination of private enterprise suitably assisted, where necessary, and production by the State where this is found to be in the public interest. The final responsibility should rest with the Government for seeing that the essential needs of the country in respect of all important medical requisites are met and this responsibility should be interpreted as covering the necessity for ensuring that these requirements are met satisfactorily in regard to quantity, quality and price.

Control

280. The Drugs Act of 1940, which was passed by the Central Legislature, now provides for the regulation of the import into and the manufacture, distribution and sale in British India of drugs. We understand that certain statutory rules under the Act will be brought into force at an early date by the Government of India. The provisions of this Act and the rules made under it should be brought into operation throughout the country and rigidly enforced with the least practicable delay.

INDIGENOUS SYSTEMS OF MEDICINE

281. We are unfortunately not in a position to assess the real value of these systems of medical treatment as practised today as we have been unable, with the time and opportunities at our disposal, to conduct such an investigation into this problem as would justify clear-cut recommendations. We do, however, say quite definitely that there are certain aspects of health protection which, in our opinion, can be secured wholly or at any rate largely, only through the scientific system of medicine. Thus public health or preventive medicine, which must play an essential part in the future of medical organisation, is not within the purview of the indigenous systems of medical treatment as they obtain at present. The indigenous systems of medical treatment do not also at present deal with such vital

aspects of medicine as obstetrics, gynaecology, advanced surgery and some of the specialities. Further, no system of medical treatment, which is static in conception and practice and does not keep pace with the discoveries and researches of scientific workers the world over, can hope to give the best available ministration to those who seek its aid.

282. We feel that we need no justification in confining our proposals to the country-wide extension of a system of medicine which, in our view, must be regarded neither as Eastern nor Western but as a corpus of scientific knowledge and practice belonging to the whole world and to which every country has made its contribution.

283. We have been informed that, in China and Japan, a moratorium extending to a definite period of years was declared after which the practice of the indigenous systems in those countries would not be recognised. We were further told by Dr. Ognev, the Soviet Representative, that indigenous systems of medical treatment were nowhere recognised in the Soviet Union.

284. We consider that it should be left to the Provincial Governments to decide what part, if any, should be played by the indigenous systems in the organisation of Public Health and Medical Relief. It is for them to consider, after such investigation as may be found necessary, under what conditions the practice of these systems should be permitted and whether it is necessary, either during some interim period or as a permanent measure, to utilise them in their schemes of medical relief.

What we have said in regard to the indigenous systems applies generally to Homeopathy also.*

REGULATION OF THE MEDICAL, DENTAL, NURSING AND PHARMACEUTICAL PROFESSIONS

Regulation of the Medical Profession

285. Practitioners of the scientific system of medicine are, the world over, subject to more or less rigid regulation, the degree of such regulation and the authority from which it is derived varying with different countries. In the United Kingdom this function is vested in the General Medical Council of Medical Education and Registration of the United Kingdom, which was established by the Medical Act of 1858 and which has been vested with the duty of securing the maintenance of the requisite standards of proficiency from candidates at the qualifying examinations for entry into the Medical Register. In India the Indian Medical Council, which was established by the Medical Council Act of 1933, has not been authorised to maintain an all-India Medical Register. The basic qualifications for medical registration are those of medical licentiates, a body of practitioners who are the concern of the Provincial Medical Councils. The maintenance of Medical Registers and the supervision of the basic qualifications required for entry into them are, at present, responsibilities entrusted to Provincial Medical Councils and Faculties. The supervision of the Indian Medical Council is, as yet, restricted to certain medical qualifications which are granted by

*Drs. Butt, Vishwa Nath and Narayanrao do not accept this view. They desire to see that the services of persons trained in the indigenous systems of medicine are freely utilised for developing medical relief and public health work in the country.

Indian universities and which are incorporated in the First Schedule of the Indian Medical Council Act.

286. We consider this position unsatisfactory. We are recommending that, for the future, there should be only one basic medical qualification for entry into the profession throughout India and that the portal of entry should be a university degree. The production of the licentiate type of doctor will cease after some time if these recommendations of ours are accepted. In the circumstances we recommend that the Medical Council of India should be empowered to maintain an All-India Register when the training of licentiates ceases throughout the country.*

287. The need for restricting the right to prescribe drugs in the British Pharmacopoea and to practise scientific medicine by unqualified and unregistered personnel was emphasised in our discussions. In this connection we considered the desirability of enacting legislation providing (1) that no medical practitioner should be entitled to affix the designation "doctor" before his name unless he is a registered medical practitioner in modern scientific medicine, (2) that no person should be entitled to prescribe drugs in the British Pharmacopoea, especially injections and poisonous preparations, unless he is a registered practitioner and (3) that those who practise Unani or Ayurvedic systems of medicine should style themselves as "Hakims" or "Vaids" as the case may be.

288. We consider that the public is entitled to know the exact credentials of persons on whom they call for advice and treatment and to protection against fraudulent imposition. We suggest that legislation should be made so as to provide that no person shall be entitled to use the style or appellation of "doctor" other than those who (a) hold the Doctor's degree of a Faculty of a University recognised by the State or (b) are practitioners qualified to practise modern scientific medicine.

289. Rule 65 (9) of the Drugs Rules, 1945, under the Drugs Act, 1940, provides that a number of poisons, which are included in Schedule H of these Rules, shall not be sold in retail except on and in accordance with a prescription of a registered medical practitioner. But Schedule H does not contain all the poisons enumerated in Schedule E of the same rules. We consider that, if Schedule E can also be included within the operation of Rule 65 (9), our colleague's recommendation would be met adequately and that any further restrictive legislation is of doubtful advisability and practicability.

290. The terms "Hakim" and "Vaid" are honourable titles of considerable antiquity and it is by no means clear to us why persons entitled to use these honourable appellations should desire to assume any other. We do not feel competent to make any recommendations regarding the organisation and regulation of indigenous systems of medicine. We therefore confine ourselves to the recommendation that Provincial Governments, if they desire to recognise these systems, might with profit follow the example of the Government of Bombay and enact legislation by which all persons practising any form of the healing art are compelled to secure registration in a

*Drs. Vishwa Nath and Butt are not in agreement with this recommendation and their note will be found appended to Chapter XXIV of Volume II of the report. They suggest the maintenance of the existing position in respect of all these Councils.

schedule or schedules appropriate to the system in vogue and their qualifications in such system.

The Dental Profession

291. The profession of dentistry is, as yet, totally unorganised in India and no legal provision exists for its regulation. We recommend that legislation should be undertaken in order to create Central and Provincial Dental Councils. The latter should be charged with the duty of recognising training institutions and of creating and maintaining Dental Registers as well as with the disciplinary regulation of the profession, subject to appeal. The Central Dental Council should be concerned with the direction and co-ordination of the activities of the Provincial Councils, the definition and maintenance of minimum educational standards, which implies the right of inspection and recognition of training institutions, the maintenance of an All-India Dental Register, the disposal of appeals against disciplinary decisions by the Provincial Councils subject, as may be necessary, to the directions of the Federal Court and the regulation of reciprocity within and without India.

Regulation of the Nursing Profession, including those of Midwives and Health Visitors

292. At present the regulation of the nursing profession, which includes those of midwives and health visitors, is vested in Provincial Nursing Councils which maintain registers of persons who have completed approved courses of training in institutions recognised by them for the purpose and have passed the prescribed examinations. Persons so registered are entitled to practise the profession in their own province. Arrangements for reciprocity with other provinces exist to a degree which varies with the Nursing Council concerned.

293. We recommend the creation of an All-India Nursing Council to co-ordinate the activities of the Provincial Councils, to lay down minimum educational standards and to safeguard their maintenance. Questions of reciprocity within and outside India should be the concern of this Central Nursing Council. We recommend the maintenance of an All-India Register by this Council. with separate schedules for the entry of approved qualifications in general nursing, higher nursing, public health nursing, midwifery and health visiting.*

294. The power to take disciplinary action should continue, in the first instance, to be vested, as at present, in the Provincial Councils, but there should be a right of appeal to the All-India Nursing Council over their decisions, with additional provision for further appeal to the Federal Court in circumstances similar to those in which in the United Kingdom, an appeal lies to the High Court against the decision of the General Nursing Council.

Regulation of the Pharmaceutical Profession

295. For the regulation of the pharmaceutical profession we recommend the creation, as in the case of the nursing and other professions referred to above, of Central and Provincial Pharmaceutical Councils with functions which are similar to those indicated in respect of the corresponding Councils for those professions.

*Our suggestions for the composition of the Central Nursing Council are given in Appendix 50 of Volume III of the report

EMPLOYMENT OF DEMOBILISED PERSONNEL OF THE MILITARY HEALTH SERVICES

296. During the present war the Indian Army has expanded more than ten times its peace strength and, as a corollary, the military health and nursing services have undergone a considerable expansion. In addition to this phenomenal enlargement, the military medical services have undergone a radical reorganization and development dictated by the intensive application of modern science to military medical problems, which have greatly increased the professional and technical value of the personnel concerned. As a result, there exists in the medical and ancillary services of the Indian Army a great reservoir of personnel, whose training and experience render them particularly suited to employment in the civil health services. This personnel comprises Medical Officers (male and female), Dental Officers, Nurses and Technicians. We have given in Chapter XXV of Volume II a short description of each category and the civil employment for which individuals in that category would appear to be suitable.*

297. We would emphasise the supreme importance of this reservoir of trained talent being made available to the fullest possible extent to the health services of the country. If this opportunity of providing trained personnel for the carrying out of our proposals is allowed to pass without full advantage being taken of it, it may materially delay the initiation of the nation-wide health programme for the country which we contemplate. We therefore consider it essential that the services of all such personnel should be utilised, except in cases of proved unsuitability.†

THE ESTABLISHMENT OF A COMMITTEE OF STANDARDS FOR MEDICAL INSTITUTIONS AND EQUIPMENT

298. In view of the heavy constructional programme which will have to be formulated to supply the new accommodation required under our proposals, to carry out the structural alterations necessary in respect of existing buildings and to provide the vast number of fittings of all kinds required by laboratories, health centres, hospitals etc., it seems desirable that some system of standardization should be evolved which will introduce order into what may otherwise well tend to become chaos. With the achievement of order, there will be obtained the further advantage of reduced cost that automatically accompanies effective standardization. We urge the setting up of a Committee of standards for Medical Institutions and Equipment and suggest that it should be closely linked with the appropriate section in the Central Ministry of Health. Its composition should include:—

(1) architects with experience of designing and construction of medical institutions under tropical conditions;

(2) engineers with similar experience;

*We have also given in a tabular statement (Appendix 53 of Volume III of our report) for which we are indebted to the Resettlement Section of the Office of the Director General, Indian Medical Service, detailed information regarding demobilised personnel.

†Drs. Vishwa Nath and Butt, Sir Frederick James and Lieut.-General J. B. Hance desire to lay further emphasis on the remobilisation, for civil purposes, of demobilised medical and ancillary personnel and their separate note will be found at the end of Chapter XXV of Volume II of the report.

(3) medical practitioners, not merely as doctors, but as having an interest in, and experience of, design, construction and administration of medical institutions;

(4) laboratory scientists with an interest in the elaboration of laboratory fittings on a transferable unit system and

(5) members of the nursing profession with a special knowledge of the problems of internal hospital design.

299. We recommend that the Committee should, among other things, give serious consideration to the feasibility of adapting some of the many existing buildings of a temporary nature, which have been set up for war purposes by the military and civil departments of the Central and Provincial Governments, to purposes in connection with our health development programme.

RE-EMPLOYMENT OF PERSONS WHO HAVE REACHED THE AGE OF SUPERANNUATION

300. Among the major difficulties which have to be overcome in the successful implementation of our recommendations probably the greatest is the general inadequacy of existing health personnel and, in some cases, the entire absence of certain classes of professional and technical workers. The need for trained personnel is so clamant as to make the rigid maintenance of the normal rule that Government servants should be superannuated at the age of 55 inconsistent with the requirements of the situation, at any rate throughout the short-term period and probably in the earlier years of the succeeding period. Subject to physical and mental fitness persons who have reached the age of superannuation should be permitted to continue to work on a year to year basis, on the condition that they are found fit by the medical board on each occasion. In order to ensure that the continuation in service of such persons does not stand in the way of normal promotions in the health services, they should be made to retire before they are re-employed.

These recommendations of ours should apply to all members of the health services.

THE POPULATION PROBLEM

301. The steady growth of population, which has taken place during the past few decades, has had its repercussion on all such matters as the housing, clothing and feeding of the additional numbers brought into existence from year to year, their education and the provision of adequate measures for the protection of their health. No programme of social reconstruction can, therefore, afford to ignore the implications of the population problem.

302. The three main factors which influence the growth of population are (1) migration, (2) mortality and (3) fertility.

Migration

303. Owing to the restrictions which the Governments of other countries have placed on the entry of Indians into their territories, the effect of migration on India's population has been negligible for some time past and is likely to be so, at least for some time longer.

Mortality

304. During the past two decades there has been a steady fall in the mortality rate of the country. A further fall is bound to

occur if the large scale programmes for improving the health of the community advocated by the different postwar planning committees are effectively put into operation. There is every reason to believe that there will be a saving of at least three million lives every year in British India, which will bring its rate of mortality down to the level of what has already been accomplished in a number of other countries. In the decennium between 1931 and 1941 the average yearly addition to the population of India as a whole was 5 millions. An annual saving of 3 millions in British India as the result of improved health conditions will raise India's rate of growth to 8 millions a year, without taking into consideration any fall in mortality that may be brought about in the Indian States through similar health measures. Under such conditions the very large increase of 83 millions, which took place in the 20-year period between 1921 and 1941, is likely to be reached within half that time. A purposeful control of mortality, without a corresponding fall in the fertility rate of the community, can thus have far-reaching consequences.

Fertility

305. All available information seems to suggest that the fall in the fertility rate in India during the past 60 years has been negligible compared with the fall in mortality. In this connection certain estimates of the rates of fertility and mortality for the country are quoted from an interesting study of India's population problem by Kingsley Davis, under the title of "Demographic Fact and Policy in India," published in the Milbank Memorial Quarterly (July 1944).

Year	Estimated	
	Fertility rate	Death rate
1881—1891	49	41
1891—1901	46	44
1901—1911	49	43
1911—1921	48	47
1921—1931	46	36
1931—1941	45	31

306. It seems fairly clear that, at least in the immediate future, there is little reason to believe that there would be a marked fall in the fertility rate of the country.

Our Recommendations

307. In the absence of certain natural checks such as famine and disease whose operation will, speaking generally, become more and more limited as our various programmes of social security and improvement in living conditions develop, the growth of population in India will become an increasingly serious problem. Growth of population may be prevented from becoming a menace to the standard of life of the community (a) by migration, (b) by increasing the production of natural resources and (c) by a reduction in the rate of

additions to the population. We have already pointed out that the prospects of emigration helping to lessen the pressure of population on the means of subsistence in the country appear to be remote.

Increased Production

308. The advance of science, careful planning and concentrated effort on the part of the community to develop the country's resources may make possible the support of a largely increased population on even a better standard of living than that which exists at present. Such measures, however, can constitute only a temporary expedient, because a limit to economic productivity will be reached, sooner or later, and uncontrolled growth of population must, as far as we can see, outstrip the productive capacity of the country.

Reduction in the rate of Additions to Population

309. Our social instincts militate against a reduction in the rate of growth of population being brought about by permitting the death rate in the community to rise. We have therefore to turn to three other means for decreasing the rate of growth, namely, (1) a raising of the age of marriage for girls, (2) an improvement in the standard of life and (3) intentional limitation of families.

310. *Raising of the age of marriage for girls.*—Carefully collected statistics from several countries support the view that the fertility of women is at its highest during the age period 15 to 19. The raising of the age of marriage for girls by a few years from the present minimum of 14 would probably effect a reduction in the birth rate. There are also strong physiological reasons for raising the minimum age for the marriage of girls to 16, 17 or even 18. We refrain, however, from making a specific recommendation, partly because we are not unanimous on the point and partly because the question is so intimately bound up with social custom and tradition, that the Governments concerned should consider the state of public opinion before taking any decision.

311. *Improvement in the standard of living.*—An improvement in the standard of living generally tends to promote a lowering of the birth rate by helping to create an incentive in individuals to limit the size of their families in the interests of maintaining for themselves and their children a reasonable level of comfort and of enabling the latter, through proper education and through the opportunities for earning their living which such education offers, to keep up the standard of life to which they had been accustomed. Such rise must however be a slow process and, while this development goes on, it seems likely that the active measures introduced by the proposed health services will result in an appreciable reduction of the death rate and thus produce a temporary acceleration of the rate of growth of population.

312. *Intentional limitation of families.*—If we believe that limitation of families is advisable, we should first ask ourselves the question whether it is possible that this could be secured through self-control. Our answer must be, we fear, not to any material extent.

While a limited number of individuals may be under-sexed or may, by nature, be so constituted that they can sublimate most of their sexual urge into intellectual, artistic or other creative channels, the large majority of mankind, although able to convert a part of their sexual impulse into activities useful to the community, may still have to find satisfaction in the sexual act itself. In the circumstances we seem to be left with birth control through positive means as the only method which is likely to be effective.

The Extent to which the State should help to promote the Birth Control Movement

313. All of us are agreed that, when childbearing is likely to result in injury to mother or infant, there is every justification for the practice of contraception. In such cases it should be the responsibility of Governments to provide instruction regarding contraception in maternity and child-welfare centres, dispensaries, hospitals and any other public institutions which administer medical aid to women. We also consider that the supply of contraceptive requisites should be made, free of cost, by the State to necessitous women when the practice is advocated for reasons of health. There is also unanimity among us in respect of State action in two other directions, namely, (1) control over the manufacture and sale of contraceptives as in the case of food and drugs and (2) assistance from public funds towards research for the production of a safe and effective contraceptive.

314. Some of us are of the opinion that, on economic grounds also, contraception is justified in the interests of the individual and of the community and that the State should provide facilities for imparting knowledge regarding birth control when desired for such reasons. The others, while they fully appreciate the importance of relating population to the economic resources of the country, feel that the active promotion by the State of contraceptive practices for economic reasons will be justified, in view of objections to it on religious grounds in certain quarters, only if there is substantial support from public opinion.

The Extent to which the proposed Measures are likely to Restrict the Growth of Population

315. For various reasons, which include the inadequacy of medical women and of health visitors to impart birth control knowledge to the women of the country, the enormous cost of making a safe and effective contraceptive available to the people, the inability of the majority of women to learn and practice contraception satisfactorily and the disfavour with which certain communities look on birth control for religious reasons, we believe that a rapid extension of the practice of contraception among the people is unlikely in the immediate future. It also appears to us that there is little immediate prospect of raising the age of marriage for girls by legal enforcement. On the other hand, as has already been pointed out, the immediate prospect is that, with the introduction of the proposed health services and of the measures designed to advance the welfare of the community, the rate of growth of population may show an acceleration as compared with the past. While recognising fully the implications of this increase in population, we feel that the only practical steps that can be taken are (1) a relentless pursuit of the

measures that are now being proposed for the reconstruction of national life in order to raise the standard of living and (2) the spreading of the knowledge of birth control as far as the limitations imposed by the peculiar circumstances of the country will permit.

Genetics and Population Policy

316. The application of knowledge regarding heredity for the development of a healthy and vigorous stock of different species of animals and plants has been made by man with remarkable success in respect of many forms of life. As regards man, however, the extent of our knowledge regarding the hereditary transmission of disease and defect is at present very limited and, with the existing knowledge, it would be difficult to formulate and execute an effective population policy directed to promote the creation of a healthy and well-endowed community. We therefore consider it desirable that, as a part of the study of the population problem in India, the part which heredity and environment play in the transmission of valuable human traits and of defects should be investigated.

Study of the Population Problem

317. It is highly desirable that the population problem should be the subject of continuous study. Apart from the probable trend of population growth; such matters as differential fertility and mortality rates and surveys of morbidity among the various sections of the community are of interest and importance from the point of view of sound administration. The problems of heredity and environment in relation to population policy should also receive consideration. We desire to see such studies organised and conducted on as broad a basis of collaboration as possible and suggest that the Registrar General and the Provincial Registrars, with their respective staffs of trained statisticians, the Health Departments, Central and Provincial, and the Departments of Economics, Sociology, Statistics and Genetics in the Universities, wherever they exist, should participate in such studies.

ALCOHOL IN RELATION TO HEALTH

318. Drinking has, as pointed out by Professor Sigerist in his book "Civilisation and Disease", two main causes. "One is social and economic. Misery, poor living conditions, lack of education and of recreational facilities drive a man into drinking. In Russia in 1913, the annual consumption of vodka amounted to 8·1 litres or more than 2 gallons per person, and the average worker spent over a quarter of his wages on liquor. When conditions of the working population changed after the Revolution the *per capita* consumtion of liquor dropped steadily. It was 4·5 litres in 1931, 3·7 in 1935..... .....Another cause of harmful drinking is to be sought in folk customs and group habits. Since alcohol removes inhibitions and makes people talk more freely, it became the custom to drink alcoholic liquors whenever people gathered for social intercourse. This *alcoholisme mondain*, as the French call it, affects the most highly educated classes. It is not so spectacular, but has nevertheless very deleterious results." A campaign for reducing alcoholism in the community must therefore take into account both these factors. A rise in the standard of living accompanied by the provision of educational and recreational facilities on as wide a scale as possible seems to be essential to ensure the success of the campaign. The

harmful effects of convivial drinking can be brought home to the people and their co-operation secured for its effective control only through education.

Education regarding the Fundamental Facts in relation to Alcohol

319. In the United States, all but two States (Arizona and Wyoming) have laws requiring that all schools supported partly or wholly from public funds should include, in their curricula for children, courses of instruction dealing with the effects of alcohol and other narcotics on the human system. We desire to see such provision made in this country also. Proper text-books on the subject should be prepared by some central agency and they should be translated into all the languages of individual provinces by the respective Provincial Governments. In doing so it should be possible to include material, diagrammatic and narrative, which will give a local colour to the different subjects that are discussed.

Certain Other Suggestions for Combating Alcoholism and for Restricting Alcohol Consumption to the Minimum

320. We recommend the strict control of existing liquor shops and the severe restriction or even prohibition of opening new shops, particularly in the areas occupied by the poorer sections of the community, including industrial workers. There should be a reduction in the hours of sale of alcohol. The alcoholic content of the beverage sold in such places for public consumption should be within certain limits to be prescribed by the Provincial Government. The aim should be to make the places, where alcoholic beverages are permitted to be sold, decent establishments where a high standard of cleanliness is maintained and suitable alternative refreshments are provided, so that a man can take his family and order food along with drinks. The experience in the West is that, under such conditions, the excessive consumption of alcohol is generally checked. There should also be provision for the supply of non-alcoholic beverages. Milk bars, tea and coffee shops, if run on cheap lines, can help to divert the craving for intoxicating drinks into less harmful channels. The desire for alcohol at the close of the day is perhaps partly stimulated by the lack of opportunities for other forms of useful activity, including recreation and social intercourse.

321. Provincial Governments obtain today a substantial part of their revenues from alcohol. "Little economic merit can be claimed for a system of taxation which raises any considerable part of the public revenue from the sale of alcohol, unless, as a part of the plan of government, this tax money is used to reduce the extent of facilities for the sale of alcoholic beverages; to promote observance of restrictive laws; to meet the cost of prevention, care and treatment of alcoholism among the considerable number of persons whose health will be injured and whose earning capacity will be reduced by the use of alcohol". It seems important to us that a substantial part of the money so derived should be devoted by Governments in this country to measures designed to prevent the spread of alcoholism and to rehabilitate those whose health and working capacity have been injured by the excessive use of alcohol.

Treatment and Rehabilitation of Alcoholics

322. The treatment of acute and chronic alcoholism is essentially a medical problem and adequate provision should be made for it as

a part of the general health programme. The rehabilitation of the chronic alcoholic is, however, a much wider problem. Here, apart from any medical measures that may be adopted, there is the question of re-educating him to a saner outlook on life and his responsibility towards those who are dependent on him. The rescuing of the growing children in the home of such an individual from the degrading effects of brutish behaviour resulting from drunkenness is an equally important matter. The establishment of houses of detention for those alcoholics who require segregation and treatment, medical and social, should receive serious consideration. Legal sanction for such detention will, no doubt, be required and the question of acquiring the necessary powers should also be considered. In this sphere of activity voluntary effort can render valuable help. The rescuing of the individual back to normality can be helped enormously by properly directed efforts in which social workers and religious leaders should take an active part.

323. The consumption of alcohol, during working hours, by persons engaged in certain occupations is dangerous to themselves and to others. For instance, pilots in charge of aeroplanes and motor-drivers should be forbidden alcohol during working hours. It should be an offence punishable under the law for such persons to be found in a drunken state when engaged in their respective occupations. We have given these only as typical instances and there are many others in which the use of alcohol should be equally forbidden in the interests of the community. There is abundant evidence to show that the efficiency and output of the industrial worker are lowered by alcohol and that the accident rate is raised. The enforcement of total abstinence during working hours appears therefore to be of advantage from the point of industry and of workers alike.

THE INSTITUTION OF A MEDICAL LIBRARY SERVICE

324. One of the prime needs of an intellectual community is an effective library service and this is more especially the case where a highly technical subject such as medicine is concerned. India is at a great distance from other centres of scientific thought and she must inevitably draw her knowledge of advances and discoveries from books and journals published in other countries. She must be largely self-contained and the need for a full and well-selected Central Library is even greater than that of Europe and America, where facilities for the dissemination of knowledge are more highly developed.

325. India has not the funds to enable her at present to institute a library comparable with the more important libraries of the world, such as Washington with its 420,000 volumes, Leningrad with 600,000, Paris with 500,000 or even with that of the Royal Society of Medicine in London with 160,000 volumes. It seems to us, however, to be not unreasonable that we should recommend the establishment in India of a Central Library, providing, in the first instance, for the housing of 60,000 to 100,000 volumes.

326. In order to put the proposed library service on a sure foundation, an exploratory survey of the facilities existing in the United Kingdom, the United States and elsewhere should be undertaken by one or two officers (of whom at least one should be an Indian) deputed for the purpose.

327. There should be, in London, a correspondent to the library who will watch its interests in the West and act as the channel both of information and of supply in matters concerned with the library service.

328. The Central Library we envisage is one chiefly devoted to research and should be established in association with the All-India Medical Institute. When similar medical institutes are established elsewhere they will have to be provided with their own libraries. A case can be made out for an entirely separate library in the directorate of the future civil health service. We prefer, however, to leave that question, together with the proposals for the establishment of regional libraries, to the consideration of the Governments concerned after the survey, which we have suggested has been completed, when fuller and more exact information will be available.

LEGISLATION

329. Our proposals for legislation fall mainly under four heads:—

(1) those which are intended to assist in the formulation and execution of a national health policy based on the largest possible agreement between the Central and Provincial Governments and to promote the co-ordination of central and provincial health activities;

(2) those which are designed to improve health administration in the provinces, particularly the standard of such administration in local areas;

(3) those which are required for conferring special powers on health authorities to enable them to carry out their duties more effectively than they are able to do at present and

(4) those which are intended to give statutory sanction to certain proposals of ours, *e.g.* the establishment of the All-India Medical Institute, the Central Committee for Postgraduate Medical Education and Central and Provincial Water and Drainage Boards.

Consolidated Public Health Acts, Central and Provincial

330. In addition we recommend the enactment of consolidated public health Acts by the Central and Provincial Legislatures. Such Acts can serve at least three purposes, namely, (1) to bring together existing legal provisions relating to health, which are scattered over various enactments, (2) to modify those sections of the law which require change in the interests of promoting efficient administration and (3) to incorporate the new provisions which will be necessary for the development of the health programme we have recommended. At the Centre provisions relating to health are found in about 40 different Acts while, in the provinces also, a varying number of legal enactments contain such provisions.

331. Such legislation at the Centre and in the Provinces may take some time to materialise. In the meantime it is recommended that the Central Government should undertake to bring together, in a single publication, all the existing laws relating to health, both Central and Provincial.

THE FINANCIAL IMPLICATIONS OF THE PROGRAMME

332. In drawing up our proposals for the short-term programme we have given careful consideration to the instructions of the Government of India on the financial aspect of planning, which were embodied in the terms of reference defining the scope and nature of the enquiry entrusted to us. The Government of India said that it

was desirable "to plan boldly, avoiding on the one hand extravagant programmes which are obviously incapable of fulfilment and on the other halting and inadequate schemes which could have no effect on general health standards and which would bring little return for the expenditure involved". We decided that our guiding principle should be that the short-term plan must produce an appreciable improvement in the health of the people within the period of completion of the plan. This is a matter of even greater importance than questions of cost. We were strengthened in this view by two considerations. One is that planning would defeat its purpose if no satisfactory results could be demonstrated. The consequences of such failure might even be a set-back, for many years to come, in the development of health administration in the country.

333. The other consideration is that, if the rates of expenditure incurred by Provincial Governments on their medical and public health departments were to be taken even as an approximate guide to determine the financial limits of our proposals, any attempt to build a satisfactory scheme of health services for the people would be foredoomed. In 1939-40 the *per capita* expenditure on these two departments together was Re. 0-1-7 in Bihar, Re. 0-1-9 in the United Provinces, Re. 0-2-7 in Bengal. The highest figure for such expenditure was Re. 0-5-9 in the province of Bombay. In order to ascertain what an improved health service is likely to cost it may not be out of place to examine the corresponding expenditure for certain other countries, where the provision for affording health protection to the people exists on a much larger scale than in India. In Great Britain, the *per capita* expenditure on medical and public health activities was, in 1934-35, about Rs. 54-8-11 and in the United States the corresponding figure for 1938 was Rs. 51-6-0. The expenditure incurred by a country on its health services must necessarily depend on its national income and India compares, in this respect, very unfavourably with the two countries mentioned above. Certain estimates of national income for these three countries from sources to which we may reasonably attach value are quoted below:—

Country	Income *per capita*	Source of information
	Rs. A. P.	
British India . .	62 3 3	The National income of British India. 1931-32, by Dr. V. K. R. V. Rao.
Great Britain . .	1,049 6 5	Journal of the Royal Statistical Society, Vol. 103, 1940, page 517.
United States . .	1,371 7 3	Monthly Labour Review, Vol. 53, 1941, page 114.

334. The *per capita* income of the United States is about 22 times that of India and that of Great Britain about 17 times. Even after making due allowance for the much higher national incomes in those countries, India should spend annually about Rs. 3-3-0 per head of the population if her expenditure on health services were to bear the same relation to national income as the amount spent in Great Britain in 1934-35 on health measures bore to her own national income. On the basis of a similar comparison with the United States India's *per capita* expenditure on health should be Rs. 2-5-0. From our survey of modern trends in the organisation of health services in Chapter II of Volume II of our report it will be seen that the authori-

ties in those countries are dissatisfied with the provision for the health protection of their people and that expenditure on a generous scale to augment the existing services is under active consideration. In these circumstances, if India desired to develop a modern health organisation, a scale of expenditure much in advance of what the provinces have been incurring, was inevitable. We therefore decided to plan our short-term programme undeterred by the cramping limitations of existing provincial expenditure and with our main consideration directed to the development of a plan which would ensure, through its execution, a demonstrable improvement of the public health.

The Estimates of Cost

335. We give below, in tabular form, the main items of our estimates of cost separately for the first five years and the second five years of the short-term programme.

Approximate estimates of cost in respect of the proposals of the Health Survey and Development Committee for British India.

NON-RECURRING EXPENDITURE

—	First five years	Second five years	First ten years
	Rs.	Rs.	Rs.
1. Personal health services including the directional organisations associated with the Ministries of Health at the Centre and in the Provinces.	80,88,00,000	118,64,00,000	199,52,00,000
2. Professional education	22,45,00,000	19,86,00,000	42,31,00,000
3. Expenditure on other items	50,42,00,000	50,20,00,000	100,62,00,000
	153,75,00,000	188,70,00,000	342,45,00,000
4. Centre	9,22,00,000	11,32,00,000	20,54,00,000
5. British India as a whole	162,97,00,000	200,02,00,000	362,99,00,000

RECURRING EXPENDITURE

1. Personal health services including the directional organisations associated with the Ministries of Health at the Centre and in the Provinces.	116,10,00,000	250,02,00,000	366,12,00,000
2. Professional education	32,00,00,000	35,24,00,000	67,24,00,000
3. Expenditure on other items	4,54,00,000	12,32,00,000	16,86,00,000
4. Leave reserve	7,83,00,000	15,08,00,000	22,91,00,000
	160,47,00,000	312,66,00,000	473,13,00,000
5. Centre	9,63,00,000	18,76,00,000	28,39,00,000
6. British India as a whole	170,10,00,000	331,42,00,000	501,52,00,000
Payment towards amortisation of non-recurring expenditure.	25,76,00,000	74,54,00,000	100,30,00,000
Total recurring expenditure	195,86,00,000	405,96,00,000	601,82,00,000
Average annual expenditure	39,17,00,000	81,19,00,000	60,18,00,000
Average estimated population of British India.	315 millions	337·5 millions	326·25 millions
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Annual *per capita* expenditure	1 4 0	2 7 0	1 14 0

336. After making allowance for the low national income of our country as compared with those of Great Britain and the United States, the rate of expenditure on medical and public services in India should be about Rs. 3-3-0 per head of the population in order to reach the level of similar expenditure in Great Britain in 1934-35, and about Rs. 2-5-0 to reach that of the United States in 1938. Our proposals involve, during the first ten years of their execution, an anticipated expenditure of Rs. 1-14-0 per head of the population. We therefore claim that the programme of health development we have put forward cannot be considered extravagant from the financial point of view. When it is remembered that, in Great Britain and the United States, a further rise in public expenditure on health services has been considered essential in the interests of the people, we hold that there is still greater justification for considering that the demands which our scheme will make on the public purse are in no way unreasonable.

The Financing of the Health Programme

337. We realise, at the same time, that even the proposed *per capita* annual expenditure of about Rs. 1-4-0 during the first five years of the programme will require that Provincial Governments should make provision, for spending on health measures, amounts many times in excess of what they are budgeting now. The latest available figures for the combined expenditure on provincial medical and public health departments relate to 1944-45 and they are given below.

Combined expenditure on medical relief and public health activities in the provinces during 1944-45.

Province	Expenditure *per capita* in annas	Expenditure on medical relief and public health expressed as a percentage of total provincial expenditure
Madras . . .	6·2	4·7
Bombay . .	10·9	4·5
Bengal . . .	7·1	5·7
U. P. . . .	3·9	4·9
Punjab . . .	6·1	5·1
Bihar . . .	3·2	7·3
C. P. and Berar .	2·8	3·1
Assam . . .	5·4	6·2
N.-W. F. P. . .	7·7	5·0
Orissa . . .	3·4	5·9
Sind . . .	8·2	2·5

338. While a small number of items of existing expenditure in the provinces on health administration will fall within the cost of the scheme, the vast majority of them will not and, broadly speaking,

the expenditure involved in the execution of our proposals will be in addition to what the Governments, Central and Provincial, are now incurring on their medical and public health departments, which as shown above is generally on a meagre scale.

339. A reference to the last column of the above table will show that the expenditure incurred by Provincial Governments on health measures, curative and preventive, constitute but a very small fraction of their total annual expenditure, the percentage ranging from 2·5 to 7·3. On the other hand, the corresponding percentage in Great Britain during 1934-35 was 20·4 and in the United States 13·8 during 1938. It is obvious that Governments in India have, in the past, devoted an unduly small proportion of their incomes to health administration and there is therefore every justification for demanding that the ratio of expenditure under this head must be raised considerably. Governments should be prepared to increase the money spent on health to at least 15 per cent. of the total expenditure. If this is done a considerable advance will have been made in providing the required funds for the proposed health programme. At least in one province (Madras) the local legislature has laid down (Section 127 of the Public Health Act) that every municipality "shall earmark not less than 30 per cent. of its income from all sources other than Government grants, for expenditure on the advancement of public health in its local area, including expenditure on medical relief, and every district board or *panchayat* shall similarly earmark not less than 12½ per cent. of its income from such sources". We recommend that it should be a statutory obligation on Governments to spend a minimum of 15 per cent. of their revenues on health activities.

340. We consider it highly desirable that a searching enquiry should be instituted into building costs and the data on which Public Works Departments base their estimates. Instances have been brought to our notice in which private agencies have been able to carry out new building work at less than 50 per cent. of the estimates prepared by the Public Works Departments. We do not venture to base any criticism on such information, but there is undoubtedly a widespread and persistent belief that the Public Works Departments are unduly expensive agencies for the construction of public buildings. This calls for careful investigation, as considerations having far-reaching consequences for development in many spheres are involved. In this connection we wish to draw attention to the report of a Mission which was sent to the United States of America by the Ministry of Works in the United Kingdom in 1944. The object of the Mission, which was an expert body, was to study American practice with a view to securing in Great Britain in the postwar period (a) increased speed and output, (b) reduced building costs, (c) improved standard of equipment and finish and (d) improved conditions for operatives.

341. An enquiry into building methods and costs, with special reference to the Central and Provincial Public Works Departments in India would now be helpful, particularly if, with the enquiry, one or two of the representatives of His Majesty's Government's Mission to the United States were associated as well as some non-technical persons.

342. We desire to stress the organic unity of the component parts of the programme we have put forward. Large scale provision for the training of health personnel forms an essential part of the scheme, because the organisation of a trained army of fighters is the first requisite for the successful prosecution of the campaign against disease. Side by side with such training of personnel, we have provided for the establishment of a health organisation which will bring remedial and preventive services within the reach of the people, particularly of that vast section of the community which lies scattered over the rural areas and which has, in the past, been largely neglected from the point of view of health protection on modern lines. We have drawn attention to these aspects of the health programme because we feel that it is highly desirable that the plan should be accepted and executed in its entirety. We would strongly deprecate any attempt, on the plea of lack of funds, to isolate specific parts of the scheme and to give effect to them without taking into consideration the inter-relationships of the component parts of the programme. Our conception of the process of development of the national health services is that it will be a co-operative effort in which the Centre, acting with imagination and sympathy, will assist and guide a co-ordinated advance in the Provinces. We therefore look forward to a pooling of resources and of personnel, as far as circumstances permit, in the joint task that lies before the Governments.

J. W. BHORE, *Chairman.*

F. E. JAMES,

VISHWA NATH,

B. SHIVA RAO,

Members of the Sub-Committee appointed by the Health Survey and Development Committee to prepare the summary.

K. C. K. E. RAJA, *Secretary.*

NEW DELHI.

The 13th January 1946.

GIPD—82—84DofHS&DC—1-3-46—17,000.

Digitized with financial assistance from

Government of Maharashtra

on 01 February, 2020